

Ejemplo de template de RMD para producir análisis, que se guardan en PDF

template 001

[incluir nombre o nickname aqui]

Mon Mar 21, 2022

Abrir datos

Cargar datos

```
#-----  
# abrir datos  
#-----  
  
#-----  
# crear objeto de datos  
#-----  
  
data_16 <- psi2301::iccs_2016
```

Inspeccionar datos

```
#-----  
# inspeccionar datos  
#-----  
  
#-----  
# dimensiones  
#-----  
  
dim(data_16)
```

```
## [1] 94603 622
```

```
# Resultado: dim() nos entrega dos resultados,  
#           toma como input a una tabla o matriz  
#           la cantidad de filas (i.e., casos)  
#           la cantidad de columnas (i.e., variables)
```

```

#-----
# inspeccionar datos con codigo base
#-----

```

```
str(data_16)
```

```

## tibble [94,603 x 622] (S3: tbl_df/tbl/data.frame)
## $ COUNTRY      : chr [1:94603] "BFL" "BFL" "BFL" "BFL" ...
##   ..- attr(*, "label")= chr "Participant Alphanumeric Code"
## $ IDCNTY      : 'haven_labelled' num [1:94603] 956 956 956 956 956 956 956 956 956 956 ...
##   ..- attr(*, "label")= chr "Participant Code"
##   ..- attr(*, "labels")= Named num [1:2] 999998 999999
##   .. ..- attr(*, "names")= chr [1:2] "Not administered" "Omitted"
## $ IDSTUD      : 'haven_labelled' num [1:94603] 10010301 10010302 10010303 10010304 10010305 ...
##   ..- attr(*, "label")= chr "STUDENT ID"
##   ..- attr(*, "labels")= Named num [1:2] 99999998 99999999
##   .. ..- attr(*, "names")= chr [1:2] "Not administered" "Omitted"
## $ IDSCHOOL    : 'haven_labelled' num [1:94603] 1001 1001 1001 1001 1001 ...
##   ..- attr(*, "label")= chr "SCHOOL ID"
##   ..- attr(*, "labels")= Named num [1:2] 9998 9999
##   .. ..- attr(*, "names")= chr [1:2] "Not administered" "Omitted"
## $ IDCLASS     : 'haven_labelled' num [1:94603] 100103 100103 100103 100103 100103 ...
##   ..- attr(*, "label")= chr "CLASS ID"
##   ..- attr(*, "labels")= Named num [1:2] 999998 999999
##   .. ..- attr(*, "names")= chr [1:2] "Not administered" "Omitted"
## $ IDGRADE     : 'haven_labelled' num [1:94603] 8 8 8 8 8 8 8 8 8 ...
##   ..- attr(*, "label")= chr "Grade ID"
##   ..- attr(*, "labels")= Named num [1:6] 7 8 9 10 98 99
##   .. ..- attr(*, "names")= chr [1:6] "Grade 7" "Grade 8" "Grade 9" "Grade 10" ...
## $ IDPOP       : 'haven_labelled' num [1:94603] 2 2 2 2 2 2 2 2 2 ...
##   ..- attr(*, "label")= chr "Population ID"
##   ..- attr(*, "labels")= Named num [1:4] 2 3 8 9
##   .. ..- attr(*, "names")= chr [1:4] "Target grade" "Additional grade" "Not administered" "Omitted"
## $ IS3G03      : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   ..- attr(*, "label")= chr "About You/What is the highest level of education you expect to complete"
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "<ISCED level 6, 7 or 8>" "<ISCED level 4 or 5>" "<ISCED level ..."
## $ IS3G03BA    : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you ..."
##   ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
##   .. ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G03BB    : 'haven_labelled' num [1:94603] 2 2 2 2 2 2 2 NA 2 2 ...
##   ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you ..."
##   ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
##   .. ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G03BC    : 'haven_labelled' num [1:94603] 1 1 1 1 1 2 2 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you ..."
##   ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
##   .. ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G03BD    : 'haven_labelled' num [1:94603] 2 2 2 2 2 1 2 NA 2 2 ...
##   ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you ..."
##   ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
##   .. ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...

```

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## $ IS3G03BE : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 2 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you r
## ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
## ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G03BF : 'haven_labelled' num [1:94603] 2 2 2 2 2 2 NA 2 2 ...
## ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you r
## ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
## ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G03BG : 'haven_labelled' num [1:94603] 2 2 2 2 2 2 NA 2 2 ...
## ..- attr(*, "label")= chr "Your Home and your Family/Do any of these people live at home with you r
## ..- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
## ..- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G04A : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 0 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/In what country were you and your parents born
## ..- attr(*, "labels")= Named num [1:5] 0 1 7 8 9
## ..- attr(*, "names")= chr [1:5] "Other" "Country of birth is country of test" "Invalid" "Not ad
## $ IS3G04B : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 0 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/In what country were you and your parents born
## ..- attr(*, "labels")= Named num [1:5] 0 1 7 8 9
## ..- attr(*, "names")= chr [1:5] "Other" "Country of birth is country of test" "Invalid" "Not ad
## $ IS3G04C : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/In what country were you and your parents born
## ..- attr(*, "labels")= Named num [1:5] 0 1 7 8 9
## ..- attr(*, "names")= chr [1:5] "Other" "Country of birth is country of test" "Invalid" "Not ad
## $ IS3G05 : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 0 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/What language do you speak at home most of the
## ..- attr(*, "labels")= Named num [1:5] 0 1 7 8 9
## ..- attr(*, "names")= chr [1:5] "Other" "Language at home is language of test" "Invalid" "Not ad
## $ IS3G07 : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/What is the highest level of education comple
## ..- attr(*, "labels")= Named num [1:8] 1 2 3 4 5 7 8 9
## ..- attr(*, "names")= chr [1:8] "<ISCED level 6, 7 or 8>" "<ISCED level 4 or 5>" "<ISCED level
## $ IS3G09 : 'haven_labelled' num [1:94603] 1 1 1 1 2 3 1 NA 1 1 ...
## ..- attr(*, "label")= chr "Your Home and your Family/What is the highest level of education comple
## ..- attr(*, "labels")= Named num [1:8] 1 2 3 4 5 7 8 9
## ..- attr(*, "names")= chr [1:8] "<ISCED level 6, 7 or 8>" "<ISCED level 4 or 5>" "<ISCED level
## $ IS3G10A : 'haven_labelled' num [1:94603] 3 2 4 3 4 4 3 NA 2 2 ...
## ..- attr(*, "label")= chr "Your Home and your Family/How interested in political and social issues,
## ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
## ..- attr(*, "names")= chr [1:7] "Very interested" "Quite interested" "Not very interested" "Not
## $ IS3G10B : 'haven_labelled' num [1:94603] 3 2 2 2 2 3 2 NA 2 3 ...
## ..- attr(*, "label")= chr "Your Home and your Family/How interested in political and social issues,
## ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
## ..- attr(*, "names")= chr [1:7] "Very interested" "Quite interested" "Not very interested" "Not
## $ IS3G10C : 'haven_labelled' num [1:94603] 2 3 2 2 2 3 2 NA 2 2 ...
## ..- attr(*, "label")= chr "Your Home and your Family/How interested in political and social issues,
## ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
## ..- attr(*, "names")= chr [1:7] "Very interested" "Quite interested" "Not very interested" "Not
## $ IS3G11 : 'haven_labelled' num [1:94603] 3 5 3 2 5 3 4 NA 5 3 ...
## ..- attr(*, "label")= chr "Your Home and your Family/About how many books are there in your home"
## ..- attr(*, "labels")= Named num [1:8] 1 2 3 4 5 7 8 9
## ..- attr(*, "names")= chr [1:8] "None or very few (0-10 books)" "Enough to fill one shelf (11-2
## $ IS3G12A : 'haven_labelled' num [1:94603] 3 3 2 4 4 3 3 NA 2 3 ...
## ..- attr(*, "label")= chr "Your Home and your Family/How many devices are used regularly/Desktop o

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##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "None" "One" "Two" "Three or more" ...
## $ IS3G12B      : 'haven_labelled' num [1:94603] 4 4 2 2 3 3 2 NA 2 4 ...
##   .- attr(*, "label")= chr "Your Home and your Family/How many devices are used regularly/Tablet de
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "None" "One" "Two" "Three or more" ...
## $ IS3G12C      : 'haven_labelled' num [1:94603] 4 3 3 4 4 4 3 NA 4 3 ...
##   .- attr(*, "label")= chr "Your Home and your Family/How many devices are used regularly/Mobile ph
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "None" "One" "Two" "Three or more" ...
## $ IS3G13       : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   .- attr(*, "label")= chr "Your Home and your Family/Do you have an Internet connection at home"
##   .- attr(*, "labels")= Named num [1:5] 1 2 7 8 9
##   .. .- attr(*, "names")= chr [1:5] "Yes" "No" "Invalid" "Not administered" ...
## $ IS3G14A      : 'haven_labelled' num [1:94603] 2 3 1 1 1 1 4 NA 3 2 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Talking with your par
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14B      : 'haven_labelled' num [1:94603] 3 2 1 4 1 3 3 NA 4 4 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Watching television t
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14C      : 'haven_labelled' num [1:94603] 1 2 4 1 1 1 1 NA 3 4 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Reading newspaper to
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14D      : 'haven_labelled' num [1:94603] 1 2 1 1 1 1 1 NA 2 1 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Talking with friends
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14E      : 'haven_labelled' num [1:94603] 2 3 1 3 1 2 4 NA 4 2 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Talking with your par
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14F      : 'haven_labelled' num [1:94603] 1 2 1 2 1 1 2 NA 2 2 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Talking with friends
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14G      : 'haven_labelled' num [1:94603] 2 1 1 1 1 1 1 NA 2 2 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Using internet to fin
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14H      : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Posting a comment or
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G14I      : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 2 NA 1 1 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/How often involved/Sharing or commenting
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Never or hardly ever" "Monthly (at least once a month)" "Weekl
## $ IS3G15A      : 'haven_labelled' num [1:94603] 3 3 3 3 3 3 3 NA 3 3 ...
##   .- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A youth organ
##   .- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. .- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha

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## $ IS3G15B      : 'haven_labelled' num [1:94603] 3 3 3 2 3 3 2 NA 3 3 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/An environmen
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15C      : 'haven_labelled' num [1:94603] 3 3 3 3 3 3 3 NA 3 3 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A Human Right
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15D      : 'haven_labelled' num [1:94603] 3 3 3 3 1 3 2 NA 2 1 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A voluntary g
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15E      : 'haven_labelled' num [1:94603] 1 1 2 3 2 1 1 NA 3 1 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/An organisat
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15F      : 'haven_labelled' num [1:94603] 3 3 3 3 3 3 3 NA 3 3 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A group of y
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15G      : 'haven_labelled' num [1:94603] 3 3 3 2 3 3 3 NA 3 3 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/An animal ri
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15H      : 'haven_labelled' num [1:94603] 3 3 3 3 3 3 2 NA 3 1 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A religious g
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15I      : 'haven_labelled' num [1:94603] 2 2 1 2 1 1 2 NA 3 2 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A community y
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G15J      : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your Activities Outside School/Have you ever been involved/A sports team
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16A      : 'haven_labelled' num [1:94603] 2 2 3 3 3 3 2 NA 2 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Active participation in an org
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16B      : 'haven_labelled' num [1:94603] 2 2 3 2 2 1 3 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Voting for <class representat
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16C      : 'haven_labelled' num [1:94603] 3 3 3 2 3 2 3 NA 2 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Taking part in decision-making
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16D      : 'haven_labelled' num [1:94603] 3 1 3 3 2 3 3 NA 3 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Taking part in discussions at
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16E      : 'haven_labelled' num [1:94603] 3 2 3 3 2 2 3 NA 2 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Becoming a candidate for <clas

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##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16F      : 'haven_labelled' num [1:94603] 3 1 3 2 1 2 2 NA 2 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Participating in an activity
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G16G      : 'haven_labelled' num [1:94603] 2 1 3 2 1 2 1 NA 3 2 ...
##   ..- attr(*, "label")= chr "Your School/At school, have you ever done/Voluntary participation in sch
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Yes, I have done this within the last twelve months" "Yes, I ha
## $ IS3G17A      : 'haven_labelled' num [1:94603] 3 2 1 3 4 2 4 NA 1 2 ...
##   ..- attr(*, "label")= chr "Your School/Discussing issues, how often happen/Teachers encourage stud
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Never" "Rarely" "Sometimes" "Often" ...
## $ IS3G17B      : 'haven_labelled' num [1:94603] 3 2 2 1 3 1 4 NA 1 2 ...
##   ..- attr(*, "label")= chr "Your School/Discussing issues, how often happen/Teachers encourage stud
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Never" "Rarely" "Sometimes" "Often" ...
## $ IS3G17C      : 'haven_labelled' num [1:94603] 2 2 1 2 2 2 1 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your School/Discussing issues, how often happen/Students bring up curren
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Never" "Rarely" "Sometimes" "Often" ...
## $ IS3G17D      : 'haven_labelled' num [1:94603] 4 3 4 4 4 3 3 NA 3 1 ...
##   ..- attr(*, "label")= chr "Your School/Discussing issues, how often happen/Students express opinio
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Never" "Rarely" "Sometimes" "Often" ...
## $ IS3G17E      : 'haven_labelled' num [1:94603] 2 3 1 2 1 1 4 NA 2 2 ...
##   ..- attr(*, "label")= chr "Your School/Discussing issues, how often happen/Teachers encourage to d
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Never" "Rarely" "Sometimes" "Often" ...
## $ IS3G17F      : 'haven_labelled' num [1:94603] 3 4 3 4 3 2 3 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your School/Discussing issues, how often happen/Teachers present severa
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Never" "Rarely" "Sometimes" "Often" ...
## $ IS3G18A      : 'haven_labelled' num [1:94603] 3 2 1 2 4 2 4 NA 4 2 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/How citizens can
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"
## $ IS3G18B      : 'haven_labelled' num [1:94603] 3 4 4 3 4 2 4 NA 3 2 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/How laws are int
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"
## $ IS3G18C      : 'haven_labelled' num [1:94603] 2 1 1 2 1 1 1 NA 2 1 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/How to protect tl
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"
## $ IS3G18D      : 'haven_labelled' num [1:94603] 3 4 4 3 4 3 3 NA 3 2 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/How to contribut
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"
## $ IS3G18E      : 'haven_labelled' num [1:94603] 3 4 4 4 4 4 4 NA 3 3 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/How citizen righ
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"

```

```

## $ IS3G18F      : 'haven_labelled' num [1:94603] 3 3 4 2 2 3 4 NA 4 2 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/Political issues
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"
## $ IS3G18G      : 'haven_labelled' num [1:94603] 3 4 4 3 3 3 4 NA 4 2 ...
##   ..- attr(*, "label")= chr "Your School/At school, to what extent have you learned/How the economy
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "To a large extent" "To a moderate extent" "To a small extent"
## $ IS3G19A      : 'haven_labelled' num [1:94603] 1 3 2 2 2 2 2 NA 1 2 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Most of my teachers tr
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19B      : 'haven_labelled' num [1:94603] 2 2 3 3 3 4 2 NA 2 3 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Students get along wel
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19C      : 'haven_labelled' num [1:94603] 2 2 2 2 2 3 2 NA 2 3 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Most teachers are inte
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19D      : 'haven_labelled' num [1:94603] 1 2 2 2 2 4 2 NA 1 2 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Most of my teachers li
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19E      : 'haven_labelled' num [1:94603] 1 2 2 2 2 2 2 NA 2 3 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/If I need extra help, I
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19F      : 'haven_labelled' num [1:94603] 2 1 2 1 1 2 2 NA 1 1 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Most teachers would st
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19G      : 'haven_labelled' num [1:94603] 1 4 2 2 3 4 3 NA 2 2 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Most students at my sch
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19H      : 'haven_labelled' num [1:94603] 1 2 2 2 2 4 2 NA 2 2 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/Most students at my sch
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19I      : 'haven_labelled' num [1:94603] 1 2 2 2 2 3 2 NA 2 2 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/My school is a place w
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G19J      : 'haven_labelled' num [1:94603] 3 3 4 3 4 4 3 NA 3 3 ...
##   ..- attr(*, "label")= chr "Your School/Teachers and students at your school/I am afraid of being b
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G20A      : 'haven_labelled' num [1:94603] 1 2 1 3 1 1 3 NA 1 3 ...
##   ..- attr(*, "label")= chr "Your School/How often did you experience/A student called you by an off
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Not at all" "Once" "2 to 4 times" "5 times or more" ...
## $ IS3G20B      : 'haven_labelled' num [1:94603] 1 2 1 3 1 1 3 NA 1 2 ...
##   ..- attr(*, "label")= chr "Your School/How often did you experience/A student said things about you

```

```

##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Not at all" "Once" "2 to 4 times" "5 times or more" ...
## $ IS3G20C      : 'haven_labelled' num [1:94603] 1 2 1 1 1 1 1 NA 1 1 ...
##   .- attr(*, "label")= chr "Your School/How often did you experience/A student threatened to hurt y
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Not at all" "Once" "2 to 4 times" "5 times or more" ...
## $ IS3G20D      : 'haven_labelled' num [1:94603] 1 2 1 1 1 1 1 NA 1 1 ...
##   .- attr(*, "label")= chr "Your School/How often did you experience/You were physically attacked b
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Not at all" "Once" "2 to 4 times" "5 times or more" ...
## $ IS3G20E      : 'haven_labelled' num [1:94603] 1 2 1 1 1 1 1 NA 1 2 ...
##   .- attr(*, "label")= chr "Your School/How often did you experience/A student broke something belo
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Not at all" "Once" "2 to 4 times" "5 times or more" ...
## $ IS3G20F      : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   .- attr(*, "label")= chr "Your School/How often did you experience/A student posted offensive pic
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Not at all" "Once" "2 to 4 times" "5 times or more" ...
## $ IS3G21A      : 'haven_labelled' num [1:94603] 2 1 2 2 2 2 2 NA 2 1 ...
##   .- attr(*, "label")= chr "Your School/Student participation/Student participation in how schools a
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G21B      : 'haven_labelled' num [1:94603] 2 1 1 2 1 2 2 NA 2 1 ...
##   .- attr(*, "label")= chr "Your School/Student participation/Lots of positive changes can happen i
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G21C      : 'haven_labelled' num [1:94603] 2 1 1 2 2 2 2 NA 1 1 ...
##   .- attr(*, "label")= chr "Your School/Student participation/Organising groups of students to expr
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G21D      : 'haven_labelled' num [1:94603] 2 1 1 2 1 2 2 NA 2 1 ...
##   .- attr(*, "label")= chr "Your School/Student participation/Students can have more influence on w
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G21E      : 'haven_labelled' num [1:94603] 2 3 2 2 3 3 3 NA 2 2 ...
##   .- attr(*, "label")= chr "Your School/Student participation/Voting in student elections can make a
##   .- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. .- attr(*, "names")= chr [1:7] "Strongly agree" "Agree" "Disagree" "Strongly disagree" ...
## $ IS3G22A      : 'haven_labelled' num [1:94603] 3 3 3 2 1 3 2 NA 2 3 ...
##   .- attr(*, "label")= chr "Citizens and Society/Situations for democracy/Political leaders give gov
##   .- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. .- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22B      : 'haven_labelled' num [1:94603] 3 3 3 2 3 2 3 NA 3 3 ...
##   .- attr(*, "label")= chr "Citizens and Society/Situations for democracy/One company or the governm
##   .- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. .- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22C      : 'haven_labelled' num [1:94603] 2 1 2 1 2 1 1 NA 2 1 ...
##   .- attr(*, "label")= chr "Citizens and Society/Situations for democracy/People are allowed to pub
##   .- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. .- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22D      : 'haven_labelled' num [1:94603] 1 1 1 1 1 1 1 NA 1 1 ...
##   .- attr(*, "label")= chr "Citizens and Society/Situations for democracy/All adult citizens have tl
##   .- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. .- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad

```



```
## $ IS3G22E      : 'haven_labelled' num [1:94603] 2 1 1 2 1 2 2 NA 2 2 ...
##   ..- attr(*, "label")= chr "Citizens and Society/Situations for democracy/People are able to protes
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22F      : 'haven_labelled' num [1:94603] 3 2 3 2 2 3 1 NA 3 2 ...
##   ..- attr(*, "label")= chr "Citizens and Society/Situations for democracy/The police have right to l
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22G      : 'haven_labelled' num [1:94603] 2 2 1 2 1 1 1 NA 1 1 ...
##   ..- attr(*, "label")= chr "Citizens and Society/Situations for democracy/Differences in income betw
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22H      : 'haven_labelled' num [1:94603] 2 3 3 2 3 2 1 NA 2 3 ...
##   ..- attr(*, "label")= chr "Citizens and Society/Situations for democracy/The government influences
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G22I      : 'haven_labelled' num [1:94603] 1 1 2 1 1 1 1 NA 1 2 ...
##   ..- attr(*, "label")= chr "Citizens and Society/Situations for democracy/All <ethnic/racial> group
##   ..- attr(*, "labels")= Named num [1:6] 1 2 3 7 8 9
##   .. ..- attr(*, "names")= chr [1:6] "Good for democracy" "Neither good nor bad for democracy" "Bad
## $ IS3G23A      : 'haven_labelled' num [1:94603] 2 1 2 2 1 3 1 NA 2 1 ...
##   ..- attr(*, "label")= chr "Citizens and Society/How important behaviours/Voting in every national
##   ..- attr(*, "labels")= Named num [1:7] 1 2 3 4 7 8 9
##   .. ..- attr(*, "names")= chr [1:7] "Very important" "Quite important" "Not very important" "Not imp
## [list output truncated]
```

```
# Resultado: str() nos entrega la estructura de un objeto
#           despues de cada $ indica el nombre de un vector o variable
#           luego, despliega cada atributo que posee la tabla
```

```
#-----
# inspeccionar con glimpse
#-----
```

```
dplyr::glimpse(data_16)
```

```
## Rows: 94,603
## Columns: 622
## $ COUNTRY      <chr> "BFL", "BFL", "BFL", "BFL", "BFL", "BFL", "BFL", "BFL", "~
## $ IDCNTRY      <hvn_lbl1> 956, 956, 956, 956, 956, 956, 956, 956, 956, 95~
## $ IDSTUD       <hvn_lbl1> 10010301, 10010302, 10010303, 10010304, 10010305, 10~
## $ IDSCHOOL     <hvn_lbl1> 1001, 1001, 1001, 1001, 1001, 1001, 1001, 1001, 1001~
## $ IDCLASS      <hvn_lbl1> 100103, 100103, 100103, 100103, 100103, 100103, 1001~
## $ IDGRADE      <hvn_lbl1> 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8, 8~
## $ IDPOP        <hvn_lbl1> 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2~
## $ IS3G03       <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 4, 1, 1, ~
## $ IS3G03BA     <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G03BB     <hvn_lbl1> 2, 2, 2, 2, 2, 2, 2, 2, NA, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ IS3G03BC     <hvn_lbl1> 1, 1, 1, 1, 1, 1, 2, 2, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G03BD     <hvn_lbl1> 2, 2, 2, 2, 2, 2, 1, 2, NA, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ IS3G03BE     <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, 2, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G03BF     <hvn_lbl1> 2, 2, 2, 2, 2, 2, 2, 2, NA, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ IS3G03BG     <hvn_lbl1> 2, 2, 2, 2, 2, 2, 2, 2, NA, 2, 2, 2, 2, 2, 2, 2, 2, ~
## $ IS3G04A      <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, 0, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
```

```

## $ IS3G04B <hvn_lbl1> 1, 1, 1, 1, 1, 1, 0, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G04C <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G05 <hvn_lbl1> 1, 1, 1, 1, 1, 1, 0, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G07 <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 3, 1, ~
## $ IS3G09 <hvn_lbl1> 1, 1, 1, 1, 2, 3, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G10A <hvn_lbl1> 3, 2, 4, 3, 4, 4, 3, NA, 2, 2, 3, 2, 3, 3, 3, 3, ~
## $ IS3G10B <hvn_lbl1> 3, 2, 2, 2, 2, 3, 2, NA, 2, 3, 3, 3, 2, 2, 2, 2, ~
## $ IS3G10C <hvn_lbl1> 2, 3, 2, 2, 2, 3, 2, NA, 2, 2, 3, 2, 1, 2, 2, 2, ~
## $ IS3G11 <hvn_lbl1> 3, 5, 3, 2, 5, 3, 4, NA, 5, 3, 4, 1, 3, 3, 3, 2, ~
## $ IS3G12A <hvn_lbl1> 3, 3, 2, 4, 4, 3, 3, NA, 2, 3, 4, 3, 3, 3, 4, 4, ~
## $ IS3G12B <hvn_lbl1> 4, 4, 2, 2, 3, 3, 2, NA, 2, 4, 3, 4, 3, 3, 2, 4, ~
## $ IS3G12C <hvn_lbl1> 4, 3, 3, 4, 4, 4, 3, NA, 4, 3, 4, 3, 4, 4, 4, 4, ~
## $ IS3G13 <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G14A <hvn_lbl1> 2, 3, 1, 1, 1, 1, 4, NA, 3, 2, 1, 2, 2, 1, 1, 2, ~
## $ IS3G14B <hvn_lbl1> 3, 2, 1, 4, 1, 3, 3, NA, 4, 4, 1, 3, 4, 2, 4, 4, ~
## $ IS3G14C <hvn_lbl1> 1, 2, 4, 1, 1, 1, 1, NA, 3, 4, 1, 3, 2, 4, 4, 4, ~
## $ IS3G14D <hvn_lbl1> 1, 2, 1, 1, 1, 1, 1, NA, 2, 1, 1, 2, 1, 2, 1, 1, ~
## $ IS3G14E <hvn_lbl1> 2, 3, 1, 3, 1, 2, 4, NA, 4, 2, 1, 3, 3, 2, 3, 2, ~
## $ IS3G14F <hvn_lbl1> 1, 2, 1, 2, 1, 1, 2, NA, 2, 2, 1, 4, 1, 2, 1, 1, ~
## $ IS3G14G <hvn_lbl1> 2, 1, 1, 1, 1, 1, 1, NA, 2, 2, 1, 4, 1, 1, 1, 1, ~
## $ IS3G14H <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 3, 1, 1, 1, 1, ~
## $ IS3G14I <hvn_lbl1> 1, 1, 1, 1, 1, 1, 2, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G15A <hvn_lbl1> 3, 3, 3, 3, 3, 3, 3, NA, 3, 3, 3, 3, 3, 3, 3, 3, ~
## $ IS3G15B <hvn_lbl1> 3, 3, 3, 2, 3, 3, 2, NA, 3, 3, 3, 3, 3, 3, 3, 3, ~
## $ IS3G15C <hvn_lbl1> 3, 3, 3, 3, 3, 3, 3, NA, 3, 3, 3, 3, 3, 3, 3, 3, ~
## $ IS3G15D <hvn_lbl1> 3, 3, 3, 3, 1, 3, 2, NA, 2, 1, 3, 3, 3, 3, 3, 2, ~
## $ IS3G15E <hvn_lbl1> 1, 1, 2, 3, 2, 1, 1, NA, 3, 1, 1, 1, 2, 1, 2, 1, ~
## $ IS3G15F <hvn_lbl1> 3, 3, 3, 3, 3, 3, 3, NA, 3, 3, 3, 3, 3, 3, 3, 3, ~
## $ IS3G15G <hvn_lbl1> 3, 3, 3, 2, 3, 3, 3, NA, 3, 3, 3, 3, 3, 3, 3, 3, ~
## $ IS3G15H <hvn_lbl1> 3, 3, 3, 3, 3, 3, 2, NA, 3, 1, 3, 3, 3, 3, 3, 3, ~
## $ IS3G15I <hvn_lbl1> 2, 2, 1, 2, 1, 1, 2, NA, 3, 2, 3, 2, 1, 3, 1, 2, ~
## $ IS3G15J <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G16A <hvn_lbl1> 2, 2, 3, 3, 3, 3, 2, NA, 2, 1, 3, 2, 3, 3, 1, 3, ~
## $ IS3G16B <hvn_lbl1> 2, 2, 3, 2, 2, 1, 3, NA, 1, 1, 3, 1, 1, 1, 1, 2, ~
## $ IS3G16C <hvn_lbl1> 3, 3, 3, 2, 3, 2, 3, NA, 2, 1, 2, 2, 3, 2, 1, 1, ~
## $ IS3G16D <hvn_lbl1> 3, 1, 3, 3, 2, 3, 3, NA, 3, 1, 3, 1, 3, 3, 1, 3, ~
## $ IS3G16E <hvn_lbl1> 3, 2, 3, 3, 2, 2, 3, NA, 2, 1, 3, 2, 2, 2, 1, 2, ~
## $ IS3G16F <hvn_lbl1> 3, 1, 3, 2, 1, 2, 2, NA, 2, 1, 2, 2, 3, 3, 3, 2, ~
## $ IS3G16G <hvn_lbl1> 2, 1, 3, 2, 1, 2, 1, NA, 3, 2, 3, 2, 2, 3, 3, 3, ~
## $ IS3G17A <hvn_lbl1> 3, 2, 1, 3, 4, 2, 4, NA, 1, 2, 4, 2, 2, 4, 3, 2, ~
## $ IS3G17B <hvn_lbl1> 3, 2, 2, 1, 3, 1, 4, NA, 1, 2, 4, 4, 4, 4, 3, 3, ~
## $ IS3G17C <hvn_lbl1> 2, 2, 1, 2, 2, 2, 1, NA, 1, 1, 1, 3, 1, 2, 2, 1, ~
## $ IS3G17D <hvn_lbl1> 4, 3, 4, 4, 4, 3, 3, NA, 3, 1, 4, 4, 3, 4, 4, 3, ~
## $ IS3G17E <hvn_lbl1> 2, 3, 1, 2, 1, 1, 4, NA, 2, 2, 3, 4, 2, 1, 4, 1, ~
## $ IS3G17F <hvn_lbl1> 3, 4, 3, 4, 3, 2, 3, NA, 1, 1, 3, 4, 2, 2, 2, 1, ~
## $ IS3G18A <hvn_lbl1> 3, 2, 1, 2, 4, 2, 4, NA, 4, 2, 2, 2, 4, 2, 3, ~
## $ IS3G18B <hvn_lbl1> 3, 4, 4, 3, 4, 2, 4, NA, 3, 2, 4, 1, 4, 4, 3, 2, ~
## $ IS3G18C <hvn_lbl1> 2, 1, 1, 2, 1, 1, 1, NA, 2, 1, 1, 1, 4, 1, 2, 2, ~
## $ IS3G18D <hvn_lbl1> 3, 4, 4, 3, 4, 3, 3, NA, 3, 2, 2, 2, 4, 4, 3, ~
## $ IS3G18E <hvn_lbl1> 3, 4, 4, 4, 4, 4, 4, NA, 3, 3, 4, 1, 4, 4, 3, ~
## $ IS3G18F <hvn_lbl1> 3, 3, 4, 2, 2, 3, 4, NA, 4, 2, 2, 2, 4, 4, 2, ~
## $ IS3G18G <hvn_lbl1> 3, 4, 4, 3, 3, 3, 4, NA, 4, 2, 2, 3, 4, 4, 3, ~
## $ IS3G19A <hvn_lbl1> 1, 3, 2, 2, 2, 2, 2, NA, 1, 2, 2, 2, 3, 2, 1, ~
## $ IS3G19B <hvn_lbl1> 2, 2, 3, 3, 3, 4, 2, NA, 2, 3, 3, 3, 2, 2, 3, ~

```

```

## $ IS3G19C <hvn_lbl1> 2, 2, 2, 2, 2, 3, 2, NA, 2, 3, 2, 2, 3, 1, 2, 1, 2, ~
## $ IS3G19D <hvn_lbl1> 1, 2, 2, 2, 2, 4, 2, NA, 1, 2, 2, 2, 2, 3, 1, 2, ~
## $ IS3G19E <hvn_lbl1> 1, 2, 2, 2, 2, 2, 2, NA, 2, 3, 2, 2, 2, 3, 1, 2, ~
## $ IS3G19F <hvn_lbl1> 2, 1, 2, 1, 1, 2, 2, NA, 1, 1, 2, 1, 3, 4, 1, 1, 2, ~
## $ IS3G19G <hvn_lbl1> 1, 4, 2, 2, 3, 4, 3, NA, 2, 2, 2, 3, 2, 3, 2, 1, 2, ~
## $ IS3G19H <hvn_lbl1> 1, 2, 2, 2, 2, 4, 2, NA, 2, 2, 2, 3, 2, 2, 1, 2, 2, ~
## $ IS3G19I <hvn_lbl1> 1, 2, 2, 2, 2, 3, 2, NA, 2, 2, 2, 2, 2, 2, 2, 1, 2, ~
## $ IS3G19J <hvn_lbl1> 3, 3, 4, 3, 4, 4, 3, NA, 3, 3, 3, 2, 4, 3, 4, 3, 2, ~
## $ IS3G20A <hvn_lbl1> 1, 2, 1, 3, 1, 1, 3, NA, 1, 3, 2, 3, 1, 2, 1, 1, 2, ~
## $ IS3G20B <hvn_lbl1> 1, 2, 1, 3, 1, 1, 3, NA, 1, 2, 3, 3, 1, 3, 1, 1, 1, ~
## $ IS3G20C <hvn_lbl1> 1, 2, 1, 1, 1, 1, 1, NA, 1, 1, 4, 1, 1, 1, 1, 1, 1, ~
## $ IS3G20D <hvn_lbl1> 1, 2, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 2, 1, 1, ~
## $ IS3G20E <hvn_lbl1> 1, 2, 1, 1, 1, 1, 1, NA, 1, 2, 2, 1, 1, 1, 1, 1, 1, ~
## $ IS3G20F <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G21A <hvn_lbl1> 2, 1, 2, 2, 2, 2, 2, NA, 2, 1, 2, 2, 2, 1, 2, 1, 1, ~
## $ IS3G21B <hvn_lbl1> 2, 1, 1, 2, 1, 2, 2, NA, 2, 1, 2, 1, 2, 1, 2, 1, 2, ~
## $ IS3G21C <hvn_lbl1> 2, 1, 1, 2, 2, 2, 2, NA, 1, 1, 2, 1, 2, 2, 2, 1, 2, ~
## $ IS3G21D <hvn_lbl1> 2, 1, 1, 2, 1, 2, 2, NA, 2, 1, 2, 1, 1, 3, 2, 1, 2, ~
## $ IS3G21E <hvn_lbl1> 2, 3, 2, 2, 3, 3, 3, NA, 2, 2, 2, 3, 3, 1, 2, 1, 3, ~
## $ IS3G22A <hvn_lbl1> 3, 3, 3, 2, 1, 3, 2, NA, 2, 3, 3, 3, 3, 3, 3, 3, 2, ~
## $ IS3G22B <hvn_lbl1> 3, 3, 3, 2, 3, 2, 3, NA, 3, 3, 3, 3, 3, 3, 2, 2, 3, ~
## $ IS3G22C <hvn_lbl1> 2, 1, 2, 1, 2, 1, 1, NA, 2, 1, 1, 1, 1, 2, 2, 1, 2, ~
## $ IS3G22D <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G22E <hvn_lbl1> 2, 1, 1, 2, 1, 2, 2, NA, 2, 2, 1, 1, 2, 3, 3, 1, 3, ~
## $ IS3G22F <hvn_lbl1> 3, 2, 3, 2, 2, 3, 1, NA, 3, 2, 3, 2, 2, 3, 3, 3, 3, ~
## $ IS3G22G <hvn_lbl1> 2, 2, 1, 2, 1, 1, 1, NA, 1, 1, 1, 1, 2, 1, 3, 1, 2, ~
## $ IS3G22H <hvn_lbl1> 2, 3, 3, 2, 3, 2, 1, NA, 2, 3, 2, 2, 2, 3, 2, 3, 2, ~
## $ IS3G22I <hvn_lbl1> 1, 1, 2, 1, 1, 1, 1, NA, 1, 2, 1, 1, 2, 2, 3, 1, 2, ~
## $ IS3G23A <hvn_lbl1> 2, 1, 2, 2, 1, 3, 1, NA, 2, 1, 2, 2, 2, 3, 3, 1, 2, ~
## $ IS3G23B <hvn_lbl1> 4, 3, 4, 3, 4, 4, 3, NA, 3, 3, 3, 4, 4, 4, 4, 3, 3, ~
## $ IS3G23C <hvn_lbl1> 3, 3, 4, 2, 3, 3, 1, NA, 2, 2, 2, 2, 3, 2, 2, 2, 3, ~
## $ IS3G23D <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 2, 2, 1, 2, 3, 2, 1, 2, ~
## $ IS3G23E <hvn_lbl1> 1, 2, 2, 2, 2, 2, 2, NA, 2, 1, 2, 2, 2, 1, 2, 1, 2, ~
## $ IS3G23F <hvn_lbl1> 3, 2, 4, 2, 3, 3, 3, NA, 3, 3, 4, 3, 2, 3, 3, 3, 3, ~
## $ IS3G23G <hvn_lbl1> 2, 3, 2, 3, 3, 3, 3, NA, 2, 4, 2, 2, 3, 4, 3, 3, 3, ~
## $ IS3G23H <hvn_lbl1> 2, 2, 1, 2, 2, 1, 1, NA, 2, 3, 2, 2, 3, 3, 2, 2, 2, ~
## $ IS3G23I <hvn_lbl1> 1, 2, 1, 2, 2, 1, 1, NA, 2, 4, 2, 2, 2, 4, 2, 2, 2, ~
## $ IS3G23J <hvn_lbl1> 1, 2, 1, 2, 2, 1, 1, NA, 2, 2, 2, 3, 2, 4, 3, 2, 2, ~
## $ IS3G23K <hvn_lbl1> 2, 1, 2, 1, 1, 1, 2, NA, 1, 1, 2, 1, 2, 1, 2, 1, 2, ~
## $ IS3G23L <hvn_lbl1> 2, 1, 2, 1, 1, 1, 2, NA, 1, 1, 2, 1, 2, 2, 2, 1, 2, ~
## $ IS3G23M <hvn_lbl1> 1, 2, 2, 2, 1, 1, 1, NA, 1, 1, 2, 1, 2, 1, 1, 1, 1, ~
## $ IS3G23N <hvn_lbl1> 2, 2, 1, 1, 1, 1, 1, NA, 2, 1, 2, 2, 2, 2, 2, 1, 1, ~
## $ IS3G23O <hvn_lbl1> 1, 1, 1, 1, 1, 1, 2, NA, 1, 1, 2, 2, 1, 1, 2, 1, 1, ~
## $ IS3G23P <hvn_lbl1> 1, 2, 1, 2, 1, 1, 2, NA, 2, 1, 2, 1, 1, 2, 3, 1, 2, ~
## $ IS3G23Q <hvn_lbl1> 1, 3, 1, 2, 2, 2, 2, NA, 2, 2, 2, 2, 1, 3, 3, 1, 2, ~
## $ IS3G24A <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 2, 1, 1, ~
## $ IS3G24B <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 2, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G24C <hvn_lbl1> 4, 4, 4, 4, 4, 4, 4, NA, 4, 4, 4, 1, 4, 4, 3, 4, 4, ~
## $ IS3G24D <hvn_lbl1> 4, 4, 4, 4, 4, 4, 4, NA, 4, 2, 4, 3, 4, 4, 3, 4, 4, ~
## $ IS3G24E <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 2, 1, 2, 1, 1, 1, 1, 1, ~
## $ IS3G24F <hvn_lbl1> 4, 4, 4, 4, 4, 4, 4, NA, 3, 3, 4, 3, 4, 4, 2, 4, 3, ~
## $ IS3G24G <hvn_lbl1> 4, 3, 3, 4, 4, 4, 4, NA, 3, 2, 4, 2, 4, 3, 3, 4, 3, ~
## $ IS3G25A <hvn_lbl1> 1, 1, 1, 2, 1, 1, 1, NA, 1, 3, 1, 2, 1, 1, 4, 1, 1, ~
## $ IS3G25B <hvn_lbl1> 1, 1, 1, 2, 1, 1, 1, NA, 2, 3, 1, 2, 2, 1, 3, 1, 1, ~

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## $ IS3G25C <hvn_lbl1> 1, 1, 1, 2, 1, 1, 1, NA, 2, 2, 1, 2, 1, 1, 3, 1, 2, ~
## $ IS3G25D <hvn_lbl1> 2, 1, 3, 3, 3, 3, 3, NA, 2, 4, 2, 3, 3, 3, 3, 3, 3, ~
## $ IS3G25E <hvn_lbl1> 1, 1, 1, 2, 1, 1, 1, NA, 2, 2, 1, 2, 1, 1, 3, 1, 2, ~
## $ IS3G26A <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 1, 3, 2, 2, 3, 2, 2, 2, ~
## $ IS3G26B <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 2, 3, 2, 2, 2, 2, 2, 2, ~
## $ IS3G26C <hvn_lbl1> 2, 2, 3, 2, 1, 2, 1, NA, 1, 1, 2, 2, 2, 3, 2, 2, 2, ~
## $ IS3G26D <hvn_lbl1> 2, 2, 2, 2, 2, 2, 2, NA, 1, 1, 3, 3, 2, 3, 2, 1, 2, ~
## $ IS3G26E <hvn_lbl1> 2, 2, 3, 2, 2, 3, 3, NA, 2, 3, 3, 2, 2, 4, 2, 1, 3, ~
## $ IS3G26F <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 1, 3, 2, 2, 3, 2, 1, 2, ~
## $ IS3G26G <hvn_lbl1> 2, 3, 3, 2, 3, 3, 3, NA, 3, 2, 3, 3, 3, 4, 3, 4, 3, ~
## $ IS3G26H <hvn_lbl1> 2, 4, 3, 3, 3, 4, 3, NA, 3, 4, 3, 3, 3, 4, 3, 4, 3, ~
## $ IS3G26I <hvn_lbl1> 2, 2, 2, 2, 2, 2, 1, NA, 2, 1, 3, 3, 3, 3, 1, 1, 2, ~
## $ IS3G26J <hvn_lbl1> 2, 2, 2, 2, 1, 2, 2, NA, 1, 2, 2, 2, 2, 1, 3, 1, 2, ~
## $ IS3G26K <hvn_lbl1> 2, 1, 3, 2, 2, 2, 2, NA, 1, 1, 3, 2, 2, 3, 2, 1, 2, ~
## $ IS3G26L <hvn_lbl1> 3, 2, 2, 2, 2, 3, 2, NA, 2, 2, 3, 3, 3, 2, 2, 4, 2, ~
## $ IS3G26M <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 2, 3, 2, 2, 3, 2, 2, 2, ~
## $ IS3G26N <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 2, 3, 2, 2, 3, 2, 1, 2, ~
## $ IS3G26O <hvn_lbl1> 2, 2, 3, 2, 2, 2, 2, NA, 2, 2, 3, 2, 2, 3, 2, 1, 2, ~
## $ IS3G27A <hvn_lbl1> 2, 1, 3, 1, 3, 3, 3, NA, 2, 2, 2, 2, 4, 3, 3, 2, 1, ~
## $ IS3G27B <hvn_lbl1> 1, 1, 2, 1, 2, 2, 2, NA, 2, 2, 2, 2, 2, 2, 2, 1, 1, ~
## $ IS3G27C <hvn_lbl1> 1, 3, 2, 1, 2, 3, 2, NA, 2, 1, 2, 1, 4, 1, 1, 1, 2, ~
## $ IS3G27D <hvn_lbl1> 1, 2, 1, 1, 2, 2, 3, NA, 2, 1, 2, 1, 4, 1, 2, 1, 2, ~
## $ IS3G27E <hvn_lbl1> 2, 2, 3, 1, 3, 2, 3, NA, 2, 1, 3, 1, 3, 3, 1, 2, 2, ~
## $ IS3G28A <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ IS3G28B <hvn_lbl1> 2, 4, 3, 2, 3, 1, 1, NA, 2, 2, 2, 1, 2, 3, 2, 2, 1, ~
## $ IS3G28C <hvn_lbl1> 2, 3, 3, 2, 2, 1, 2, NA, 3, 2, 2, 1, 2, 4, 1, 1, 2, ~
## $ IS3G28D <hvn_lbl1> 1, 1, 2, 2, 2, 1, 2, NA, 3, 2, 2, 1, 3, 1, 1, 1, 3, ~
## $ IS3G28E <hvn_lbl1> 1, 2, 1, 2, 4, 1, 1, NA, 2, 1, 1, 1, 1, 2, 1, 1, 2, ~
## $ IS3G28F <hvn_lbl1> 1, 1, 2, 1, 2, 2, 2, NA, 2, 1, 2, 2, 2, 1, 1, 1, 2, ~
## $ IS3G28G <hvn_lbl1> 1, 1, 1, 3, 3, 1, 2, NA, 3, 2, 1, 2, 2, 1, 1, 1, 2, ~
## $ IS3G28H <hvn_lbl1> 1, 3, 1, 2, 3, 1, 2, NA, 2, 2, 1, 1, 2, 2, 1, 1, 1, ~
## $ IS3G28I <hvn_lbl1> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 2, 2, 1, 1, 1, 1, ~
## $ IS3G28J <hvn_lbl1> 2, 3, 1, 3, 3, 1, 3, NA, 3, 2, 2, 2, 3, 2, 2, 2, 2, ~
## $ IS3G28K <hvn_lbl1> 3, 1, 1, 1, 3, 1, 2, NA, 2, 1, 1, 2, 2, 1, 2, 1, 2, ~
## $ IS3G28L <hvn_lbl1> 2, 2, 1, 2, 2, 2, 1, NA, 2, 1, 1, 1, 3, 1, 1, 1, 1, ~
## $ IS3G28M <hvn_lbl1> 1, 1, 2, 1, 2, 1, 1, NA, 1, 1, 1, 1, 3, 1, 1, 1, 2, ~
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## $ IS3G29C <hvn_lbl1> 3, 2, 4, 3, 2, 4, 3, NA, 3, 1, 3, 3, 3, 1, 2, 2, 2, ~
## $ IS3G29D <hvn_lbl1> 3, 2, 4, 2, 3, 3, 3, NA, 3, 1, 3, 4, 2, 3, 2, 1, 2, ~
## $ IS3G29E <hvn_lbl1> 3, 2, 4, 2, 4, 4, 3, NA, 1, 2, 3, 3, 3, 4, 2, 2, 3, ~
## $ IS3G29F <hvn_lbl1> 3, 2, 4, 4, 2, 3, 3, NA, 2, 4, 3, 4, 2, 3, 3, 3, 2, ~
## $ IS3G29G <hvn_lbl1> 3, 2, 4, 3, 3, 3, 3, NA, 2, 2, 3, 2, 3, 4, 3, 3, 2, ~
## $ IS3G30A <hvn_lbl1> 2, 3, 2, 2, 3, 2, 3, NA, 2, 2, 3, 2, 2, 3, 2, 3, 3, ~
## $ IS3G30B <hvn_lbl1> 3, 4, 3, 3, 3, 3, 3, NA, 3, 3, 3, 3, 2, 3, 3, 3, 3, ~
## $ IS3G30C <hvn_lbl1> 3, 3, 2, 3, 3, 3, 2, NA, 3, 4, 3, 3, 2, 4, 3, 2, 2, ~
## $ IS3G30D <hvn_lbl1> 3, 3, 3, 4, 3, 4, 3, NA, 3, 4, 3, 3, 3, 2, 3, 2, 3, ~
## $ IS3G30E <hvn_lbl1> 3, 3, 3, 3, 3, 3, 3, NA, 2, 4, 3, 3, 3, 3, 3, 3, 2, ~
## $ IS3G30F <hvn_lbl1> 3, 3, 4, 3, 3, 4, 4, NA, 3, 4, 3, 4, 2, 3, 3, 3, 3, ~
## $ IS3G30G <hvn_lbl1> 3, 3, 1, 3, 3, 3, 3, NA, 3, 3, 3, 2, 2, 3, 3, 3, 3, ~
## $ IS3G30H <hvn_lbl1> 1, 2, 1, 2, 1, 1, 2, NA, 2, 3, 3, 2, 1, 1, 2, 3, 2, ~
## $ IS3G30I <hvn_lbl1> 4, 2, 4, 4, 4, 4, 3, NA, 4, 4, 3, 4, 3, 4, 4, 4, 4, ~
## $ IS3G30J <hvn_lbl1> 4, 4, 4, 4, 4, 4, 4, NA, 4, 4, 3, 4, 4, 4, 4, 4, 4, ~
## $ IS3G30K <hvn_lbl1> 4, 4, 4, 4, 4, 4, 4, NA, 4, 4, 3, 4, 4, 4, 4, 4, 4, ~

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## $ IS3G31A <hvn_lb11> 1, 1, 2, 2, 2, 4, 2, NA, 1, 1, 1, 1, 1, 2, 2, 2, 1, ~
## $ IS3G31B <hvn_lb11> 1, 1, 2, 2, 2, 4, 2, NA, 1, 1, 1, 1, 1, 2, 2, 2, 1, ~
## $ IS3G31C <hvn_lb11> 3, 1, 2, 3, 3, 2, 2, NA, 1, 1, 1, 1, 1, 2, 2, 2, 2, ~
## $ IS3G31D <hvn_lb11> 3, 3, 2, 3, 3, 3, 3, NA, 2, 3, 3, 3, 3, 3, 3, 2, 2, ~
## $ IS3G31E <hvn_lb11> 4, 3, 4, 4, 4, 4, 3, NA, 4, 4, 4, 3, 3, 3, 3, 4, 3, ~
## $ IS3G31F <hvn_lb11> 4, 4, 4, 4, 4, 3, 3, NA, 4, 4, 4, 4, 3, 3, 3, 4, 3, ~
## $ IS3G31G <hvn_lb11> 4, 3, 4, 4, 4, 4, 3, NA, 4, 4, 4, 3, 3, 3, 3, 4, 3, ~
## $ IS3G31H <hvn_lb11> 4, 2, 3, 4, 2, 4, 3, NA, 4, 3, 4, 3, 2, 3, 3, 4, 3, ~
## $ IS3G31I <hvn_lb11> 2, 2, 3, 3, 2, 2, 2, NA, 2, 3, 3, 3, 2, 2, 2, 3, 2, ~
## $ IS3G31J <hvn_lb11> 1, 1, 2, 2, 1, 2, 2, NA, 2, 1, 4, 3, 2, 3, 3, 3, 2, ~
## $ IS3G31K <hvn_lb11> 1, 1, 2, 2, 2, 2, 2, NA, 1, 1, 2, 1, 1, 2, 2, 1, 1, ~
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## $ IS3G35B <hvn_lb11> 3, 2, 4, 4, 4, 3, 3, NA, 3, 2, 4, 4, 4, 3, 3, 2, 3, ~
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## $ IS3G02BN <hvn_lb11> 95602, 95602, 95601, 95602, 95602, 95602, 95607, NA,~
## $ IS3G04AN <hvn_lb11> 95601, 95601, 95601, 95601, 95601, 95601, 95604, NA,~
## $ IS3G04BN <hvn_lb11> 95601, 95601, 95601, 95601, 95601, 95601, 95604, NA,~
## $ IS3G04CN <hvn_lb11> 95601, 95601, 95601, 95601, 95601, 95601, 95601, NA,~
## $ IS3G05N <hvn_lb11> 95601, 95601, 95601, 95601, 95601, 95601, 95606, NA,~
## $ IS3G33N <hvn_lb11> 95606, 95602, 95602, 95602, 95603, 95606, 95602, NA,~
## $ IDBOOK <hvn_lb11> 7, 8, 1, 2, 3, 4, 5, 6, 7, 8, 1, 2, 3, 4, 5, 6, 7, 8~
## $ ITADMINI <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1~
## $ ITLANG <hvn_lb11> 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12, ~
## $ ILRELIAB <hvn_lb11> 0, 1, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0~
## $ STREAM <hvn_lb11> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ~
## $ S_AGE <hvn_lb11> 14, 14, 13, 14, 13, 14, 14, 13, 14, 14, 13, 13, 14, ~
## $ S_FINT <hvn_lb11> 2, 1, 2, 2, 2, 1, 2, NA, 2, 2, 1, 2, 3, 2, 2, 2, 2, ~
## $ S_FISCED <hvn_lb11> 4, 4, 4, 4, 3, 2, 4, NA, 4, 4, 4, 4, 4, 4, 4, 4, 4, ~
## $ S_FISCO <hvn_lb11> 9705, 2164, 1330, 1420, 7543, 7111, 3313, 9998, 2431~
## $ S_FISEI <hvn_lb11> NA, 60, 77, 56, 32, 40, 47, NA, 64, 85, 89, 47, 63, ~
## $ S_GENDER <hvn_lb11> 1, 0, 1, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0~
## $ S_HINT <hvn_lb11> 2, 2, 2, 2, 2, 1, 2, NA, 2, 2, 1, 2, 3, 2, 2, 2, 2, ~
## $ S_HISCED <hvn_lb11> 4, 4, 4, 4, 4, 4, 4, NA, 4, 4, 4, 4, 4, 4, 4, 4, 4, ~
## $ S_HISEI <hvn_lb11> 52, 85, 77, 56, 51, 40, 47, NA, 64, 85, 89, 69, 63, ~
## $ S_HOMLIT <hvn_lb11> 2, 4, 2, 1, 4, 2, 3, NA, 4, 2, 3, 0, 2, 2, 2, 1, 3, ~
## $ S_IMMIG <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ S_ISCED <hvn_lb11> 3, 3, 3, 3, 3, 3, 3, NA, 3, 3, 3, 3, 3, 3, 0, 3, 3, ~
## $ S_MINT <hvn_lb11> 1, 2, 2, 2, 2, 1, 2, NA, 2, 1, 1, 1, 2, 2, 2, 2, 2, ~
## $ S_MISCED <hvn_lb11> 4, 4, 4, 4, 4, 4, 4, NA, 4, 4, 4, 4, 4, 4, 4, 2, 4, ~
## $ S_MISCO <hvn_lb11> 2222, 2611, 2142, 1420, 2266, 5223, 9334, 9998, 3332~
## $ S_MISEI <hvn_lb11> 52, 85, 76, 56, 51, 31, 20, NA, 56, 66, 89, 69, 42, ~
## $ S_RELIG <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, NA, 1, 1, 0, 1, 1, 1, 1, 1, 1, ~

```

```

## $ S_RELSE <hvn_lb11> 2, 2, 1, 0, 2, 1, 1, NA, 2, 3, 2, 1, 0, 1, 2, 2, 2, ~
## $ S_SINT <hvn_lb11> 1, 2, 0, 1, 0, 0, 1, NA, 2, 2, 1, 2, 1, 1, 1, 1, 1, ~
## $ S_TLANG <hvn_lb11> 1, 1, 1, 1, 1, 1, 0, NA, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ S_ABUSE <hvn_lb11> 37, 58, 37, 56, 37, 37, 56, NA, 37, 56, 62, 56, 37, ~
## $ S_CNTATT <hvn_lb11> 53, 47, 41, 65, 38, 38, 36, NA, 44, 53, 41, 53, 28, ~
## $ S_CITCON <hvn_lb11> 44, 50, 34, 50, 44, 39, 53, NA, 47, 53, 44, 47, 44, ~
## $ S_CITEFF <hvn_lb11> 43, 55, 17, 47, 49, 39, 45, NA, 51, 55, 41, 41, 47, ~
## $ S_CITRESP <hvn_lb11> 52, 46, 52, 52, 60, 60, 46, NA, 52, 60, 41, 52, 49, ~
## $ S_CITSOC <hvn_lb11> 55, 44, 59, 44, 44, 55, 55, NA, 48, 32, 48, 44, 41, ~
## $ S_CIVLRN <hvn_lb11> 42, 38, 38, 44, 38, 45, 34, NA, 36, 53, 47, 57, 14, ~
## $ S_ELECPART <hvn_lb11> 51, 62, 47, 43, 43, 34, 47, NA, 62, 62, 62, 62, 62, ~
## $ S_ETHRGHT <hvn_lb11> 59, 66, 54, 41, 54, 54, 54, NA, 48, 34, 59, 41, 51, ~
## $ S_GENEQL <hvn_lb11> 64, 64, 64, 64, 64, 64, 64, NA, 56, 44, 64, 43, 64, ~
## $ S_ILLACT <hvn_lb11> 39, 49, 39, 39, 39, 39, 45, NA, 39, 39, 54, 39, 45, ~
## $ S_INTACT <hvn_lb11> 68, 40, 50, 50, 44, 29, 44, NA, 50, 50, 50, 40, 50, ~
## $ S_INTRUST <hvn_lb11> 54, 54, 43, 54, 57, 52, 54, NA, 60, 62, 43, 52, 54, ~
## $ S_LEGACT <hvn_lb11> 45, 41, 49, 43, 43, 41, 43, NA, 48, 37, 43, 45, 53, ~
## $ S_OPDISC <hvn_lb11> 49, 47, 39, 47, 49, 37, 53, NA, 33, 33, 53, 59, 43, ~
## $ S_POLDISC <hvn_lb11> 48, 59, 35, 51, 35, 43, 61, NA, 61, 51, 35, 61, 51, ~
## $ S_POLPART <hvn_lb11> 36, 49, 43, 36, 43, 40, 49, NA, 40, 40, 36, 46, 52, ~
## $ S_COMPART <hvn_lb11> 52, 52, 47, 52, 55, 52, 57, NA, 47, 57, 52, 52, 47, ~
## $ S_SCHPART <hvn_lb11> 43, 57, 29, 47, 52, 52, 43, NA, 54, 78, 43, 59, 47, ~
## $ S_RELINF <hvn_lb11> 46, 44, 28, 34, 40, 40, 48, NA, 37, 52, 28, 42, 37, ~
## $ S_SCACT <hvn_lb11> 41, 48, 21, 41, 44, 39, 41, NA, 46, 55, 39, 44, 48, ~
## $ S_SOCMED <hvn_lb11> 49, 39, 39, 39, 39, 39, 49, NA, 49, 49, 39, 65, 39, ~
## $ S_STUTREL <hvn_lb11> 60, 45, 45, 45, 45, 36, 49, NA, 57, 40, 45, 45, 42, ~
## $ S_VALPARTS <hvn_lb11> 46, 57, 57, 46, 50, 42, 42, NA, 50, 61, 46, 54, 46, ~
## $ S_NISB <hvn_lb11> 0.48, 1.76, 1.17, 0.22, 0.83, 0.15, 0.72, NA, 1.19, ~
## $ PV1CIV <hvn_lb11> 610, 749, 675, 622, 668, 641, 619, 685, 571, 684, 69~
## $ PV2CIV <hvn_lb11> 610, 693, 688, 585, 701, 562, 605, 602, 635, 650, 64~
## $ PV3CIV <hvn_lb11> 628, 661, 697, 646, 645, 624, 587, 652, 650, 664, 69~
## $ PV4CIV <hvn_lb11> 615, 672, 631, 538, 631, 632, 614, 634, 602, 667, 62~
## $ PV5CIV <hvn_lb11> 619, 682, 724, 610, 634, 601, 673, 626, 579, 618, 66~
## $ INICS16 <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ WGTFAC1 <hvn_lb11> 3.7, 3.7, 3.7, 3.7, 3.7, 3.7, 3.7, 3.7, 3.7, 3.7, 3.~
## $ WGTADJ1S <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ WGTFAC2S <hvn_lb11> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, ~
## $ WGTADJ2S <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ WGTADJ3S <hvn_lb11> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ TOTWGTS <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ JKZONES <hvn_lb11> 30, 30, 30, 30, 30, 30, 30, 30, 30, 30, 30, 30, 30, ~
## $ JKREPS <hvn_lb11> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ SRWGT1 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT2 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT3 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT4 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT5 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT6 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT7 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT8 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT9 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT10 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT11 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~
## $ SRWGT12 <hvn_lb11> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, ~

```

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

```

## $ n_j <int> 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 13, 1~
## $ T_AGE_c <dbl> 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 4~
## $ T_CCESUB_c <dbl> 0.38, 0.38, 0.38, 0.38, 0.38, 0.38, 0.38, 0.38, 0.38, 0.3~
## $ T_GENDER_c <dbl> 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.0, 1.~
## $ T_TIME_c <dbl> 0.55, 0.55, 0.55, 0.55, 0.55, 0.55, 0.55, 0.55, 0.55, 0.5~
## $ T_BULSCH_c <dbl> 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 5~
## $ T_CIVCLAS_c <dbl> 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 4~
## $ T_PCCLIM_c <dbl> 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 4~
## $ T_PDACCE_c <dbl> 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 5~
## $ T_PDATCH_c <dbl> 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 5~
## $ T_PROBSC_c <dbl> 56, 56, 56, 56, 56, 56, 56, 56, 56, 56, 56, 56, 56, 5~
## $ T_PRPCCE_c <dbl> 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 4~
## $ T_STDCOM_c <dbl> 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 4~
## $ T_STUDB_c <dbl> 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 4~
## $ T_TCHPRT_c <dbl> 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 4~
## $ T_AGE_m <dbl> 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 4~
## $ T_CCESUB_m <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, ~
## $ T_GENDER_m <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ T_TIME_m <dbl> 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.5, 0.~
## $ T_BULSCH_m <dbl> 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 5~
## $ T_CIVCLAS_m <dbl> 39, 39, 39, 39, 39, 39, 39, 39, 39, 39, 39, 39, 39, 3~
## $ T_PCCLIM_m <dbl> 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 43, 4~
## $ T_PDACCE_m <dbl> 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 53, 5~
## $ T_PDATCH_m <dbl> 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 5~
## $ T_PROBSC_m <dbl> 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 5~
## $ T_PRPCCE_m <dbl> 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 4~
## $ T_STDCOM_m <dbl> 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 52, 5~
## $ T_STUDB_m <dbl> 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 4~
## $ T_TCHPRT_m <dbl> 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 44, 4~
## $ T_AGE_d <dbl> 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 10, 1~
## $ T_CCESUB_d <dbl> 0.51, 0.51, 0.51, 0.51, 0.51, 0.51, 0.51, 0.51, 0.51, 0.5~
## $ T_GENDER_d <dbl> 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.00, 0.0~
## $ T_TIME_d <dbl> 0.22, 0.22, 0.22, 0.22, 0.22, 0.22, 0.22, 0.22, 0.22, 0.2~
## $ T_BULSCH_d <dbl> 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.3, 9.~
## $ T_CIVCLAS_d <dbl> 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.5, 3.~
## $ T_PCCLIM_d <dbl> 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.5, 9.~
## $ T_PDACCE_d <dbl> 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.9, 8.~
## $ T_PDATCH_d <dbl> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, ~
## $ T_PROBSC_d <dbl> 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.4, 7.~
## $ T_PRPCCE_d <dbl> 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.3, 7.~
## $ T_STDCOM_d <dbl> 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.9, 9.~
## $ T_STUDB_d <dbl> 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.2, 7.~
## $ T_TCHPRT_d <dbl> 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.7, 5.~
## $ T_AGE_g <dbl> 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 40, 4~
## $ T_CCESUB_g <dbl> 0.36, 0.36, 0.36, 0.36, 0.36, 0.36, 0.36, 0.36, 0.36, 0.3~
## $ T_GENDER_g <dbl> 0.67, 0.67, 0.67, 0.67, 0.67, 0.67, 0.67, 0.67, 0.67, 0.6~
## $ T_TIME_g <dbl> 0.45, 0.45, 0.45, 0.45, 0.45, 0.45, 0.45, 0.45, 0.45, 0.4~
## $ T_BULSCH_g <dbl> 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 54, 5~
## $ T_CIVCLAS_g <dbl> 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 4~
## $ T_PCCLIM_g <dbl> 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 4~
## $ T_PDACCE_g <dbl> 46, 46, 46, 46, 46, 46, 46, 46, 46, 46, 46, 46, 46, 4~
## $ T_PDATCH_g <dbl> 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 51, 5~
## $ T_PROBSC_g <dbl> 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 57, 5~
## $ T_PRPCCE_g <dbl> 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 45, 4~

```

```
## $ T_STDCOM_g <dbl> 49, 49, 49, 49, 49, 49, 49, 49, 49, 49, 49, 49, 49, 49, 4~
## $ T_STUDB_g <dbl> 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 48, 4~
## $ T_TCHPRT_g <dbl> 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 47, 4~
## $ wt <dbl> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 2~
## $ wi <dbl> 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, 6, ~
## $ wj <dbl> 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.8, 3.~
## $ wh <dbl> 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 23, 2~
## $ wa1 <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ wa2 <dbl> 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.7~
## $ wb1 <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, ~
## $ wb2 <dbl> 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.75, 0.7~
## $ ws <dbl> 0.31, 0.31, 0.31, 0.31, 0.31, 0.31, 0.31, 0.31, 0.31, 0.31, 0.3~
```

```
# Resultado: dplyr::glimpse() entrega información resumida de los datos
# en las primeras líneas entrega las filas y columnas
# el resto de la información que entrega es de cada vector
# de la tabla, su tipo (e.g., chr, dbl) y una muestra de valores.
```

Cantidad de casos por cluster

Los datos de ICCS 2016, se encuentran anidados por por dos factores relevantes: escuelas, y países.

En los siguientes ejemplos, obtendremos la cantidad de cada cluster: países y escuelas.

- La variable país es 'IDCNTRY'
- La variable escuela es 'IDSCHOOL'

Cantidad de casos por país

```
#-----
# casos por país
#-----

#-----
# nombres de países
#-----

country_list <- read.table(text = "
IDCNTRY      ctry_text
100      'Bulgaria'
152      'Chile'
158      'Chinese Taipei'
170      'Colombia'
191      'Croatia'
208      'Denmark'
214      'Dominican Republic'
233      'Estonia'
246      'Finland'
344      'Hong Kong SAR'
380      'Italy'
```

```

410     'Korea, Republic of'
428     'Latvia'
440     'Lithuania'
470     'Malta'
484     'Mexico'
528     'Netherlands'
578     'Norway'
604     'Peru'
643     'Russian Federation'
705     'Slovenia'
752     'Sweden'
956     'Belgium (Flemish)'
276001  'North Rhine-Westphalia'
",
header=TRUE, stringsAsFactors = FALSE)

# Nota: ctry_text es la variable que contendrá los nombres de países.

#-----
# agregar nombres de países
#-----

library(dplyr) # cargamos dplyr, para poder ocupar "%>%\" entre comandos
data_model <- data_16 %>%
  psi2301::remove_labels() %>%
  dplyr::left_join(., country_list,
    by = 'IDCNTRY')

# Nota: dplyr::left_join() nos permite agregar
#       informacion a una tabla pre-existente, empleando
#       empleando una segunda tabla. El argumento
#       "by = '[variable_clace o viables_clave]' \"
#       es requerida para que R haga un match uno a uno respecto
#       a donde agregar las variables nuevas.

#-----
# cantidad de casos por país via table()
#-----

table(data_model$ctry_text)

```

```

##
##      Belgium (Flemish)      Bulgaria      Chile
##      2931                2966            5081
##      Chinese Taipei        Colombia      Croatia
##      3953                5609            3896
##      Denmark              Dominican Republic  Estonia
##      6254                3937            2857
##      Finland              Hong Kong SAR      Italy
##      3173                2653            3450
##      Korea, Republic of    Latvia          Lithuania
##      2601                3224            3631

```

```
##           Malta           Mexico           Netherlands
##           3764           5526           2812
## North Rhine-Westphalia       Norway           Peru
##           1451           6271           5166
## Russian Federation           Slovenia           Sweden
##           7289           2844           3264
```

```
#-----
# cantidad de casos por país via xtabs()
#-----

xtabs(~ ctry_text, data = data_model)
```

```
## ctry_text
## Belgium (Flemish)           Bulgaria           Chile
##           2931           2966           5081
## Chinese Taipei           Colombia           Croatia
##           3953           5609           3896
## Denmark           Dominican Republic           Estonia
##           6254           3937           2857
## Finland           Hong Kong SAR           Italy
##           3173           2653           3450
## Korea, Republic of           Latvia           Lithuania
##           2601           3224           3631
## Malta           Mexico           Netherlands
##           3764           5526           2812
## North Rhine-Westphalia       Norway           Peru
##           1451           6271           5166
## Russian Federation           Slovenia           Sweden
##           7289           2844           3264
```

```
#-----
# cantidad de casos por país via dplyr::count
#-----

data_model %>%
dplyr::count(ctry_text) %>%
knitr::kable()
```

ctry_text	n
Belgium (Flemish)	2931
Bulgaria	2966
Chile	5081
Chinese Taipei	3953
Colombia	5609
Croatia	3896
Denmark	6254
Dominican Republic	3937
Estonia	2857
Finland	3173
Hong Kong SAR	2653
Italy	3450

ctry_text	n
Korea, Republic of	2601
Latvia	3224
Lithuania	3631
Malta	3764
Mexico	5526
Netherlands	2812
North Rhine-Westphalia	1451
Norway	6271
Peru	5166
Russian Federation	7289
Slovenia	2844
Sweden	3264

Gráfico de cantidad de casos por país (via barplot)

```
#-----
# casos por país
#-----

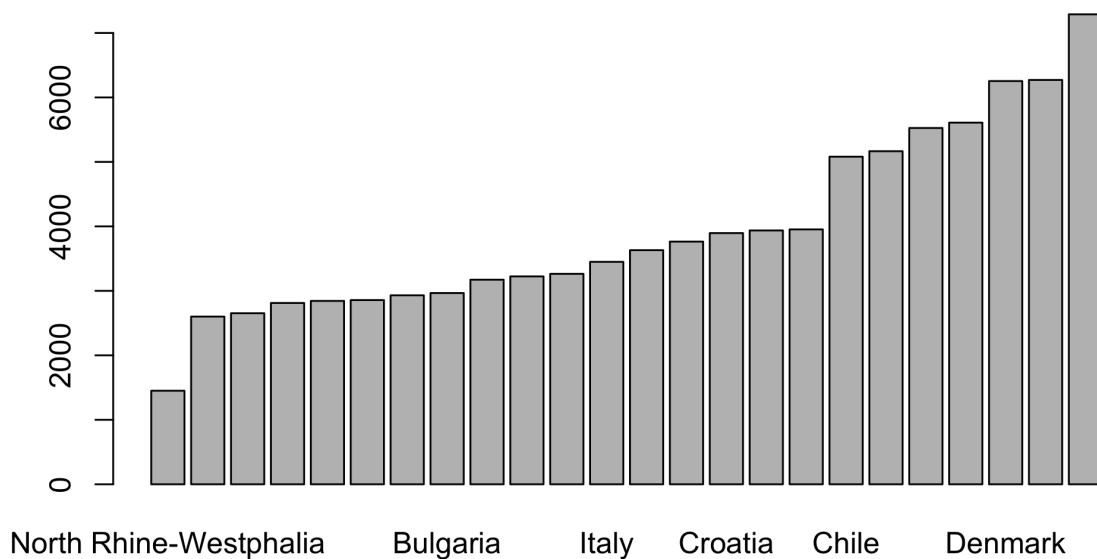
#-----
# nombres de países
#-----

sample_i <- data_model %>%
  dplyr::count(ctry_text) %>%
  arrange(n)

# Nota: a la tabla que describe la cantidad de casos, la llamaremos
#       'sample_i'; mientras que a la tabla de escuelas, la llamaremos
#       'sample_j'. En datos que se encuentran anidados, es muy comun
#       refereir a los casos como "i" (de 1 a n), y referir
#       a los clusters como "j" (de 1 a n). De modo tal, que se
#       habla del caso "i" en el cluster "j" (e.g., estudiante "i", en la escuela "j").

#-----
# gráfico simple
#-----

barplot(
  height = sample_i$n,          # cifra graficada
  names.arg = sample_i$ctry_text, # nombres de cada barra en eje x
)
```

```

#-----
# gráfico editado
#-----

# definir margenes del plot
par(mar=c(10,4,4,4))

# 'mar' A numerical vector of the form 'c(bottom, left, top, right)'
#       which gives the number of lines of margin to be specified on
#       the four sides of the plot. The default is 'c(5, 4, 4, 2) +
#       0.1'.

barplot(
  height = sample_i$n,           # cifra graficada
  names.arg = sample_i$ctry_text, # nombres de cada barra en eje x
  col = c('#397CDA'),          # color de barras
  las=2,                        # mueve los nombres de cada barra en perpendicular al grafico
  cex.names=.8                  # tamaño de los textos
)

```

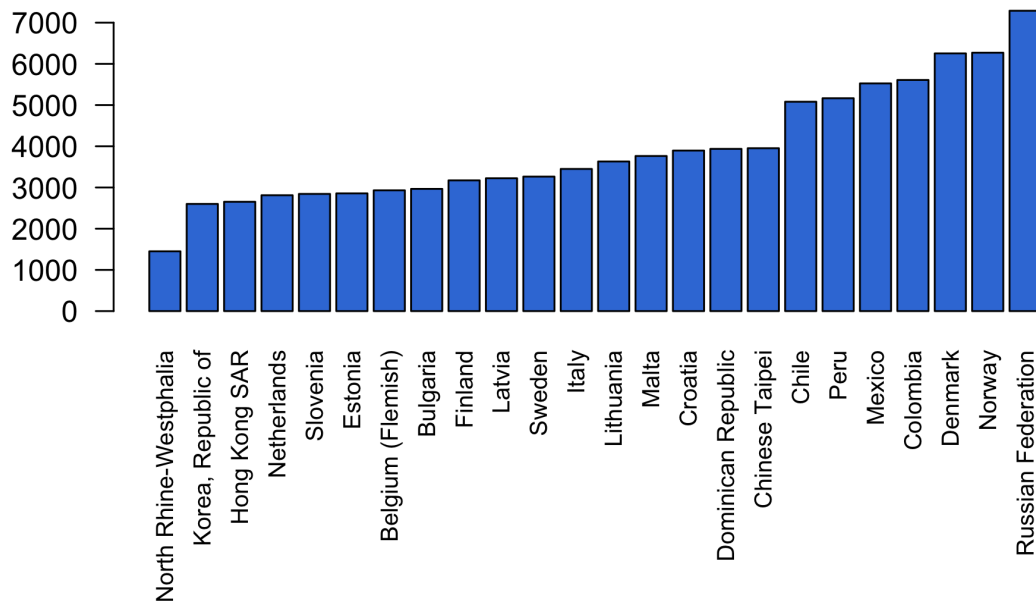


Gráfico de cantidad de casos por país (via ggplot)

```
#-----
# casos por país
#-----

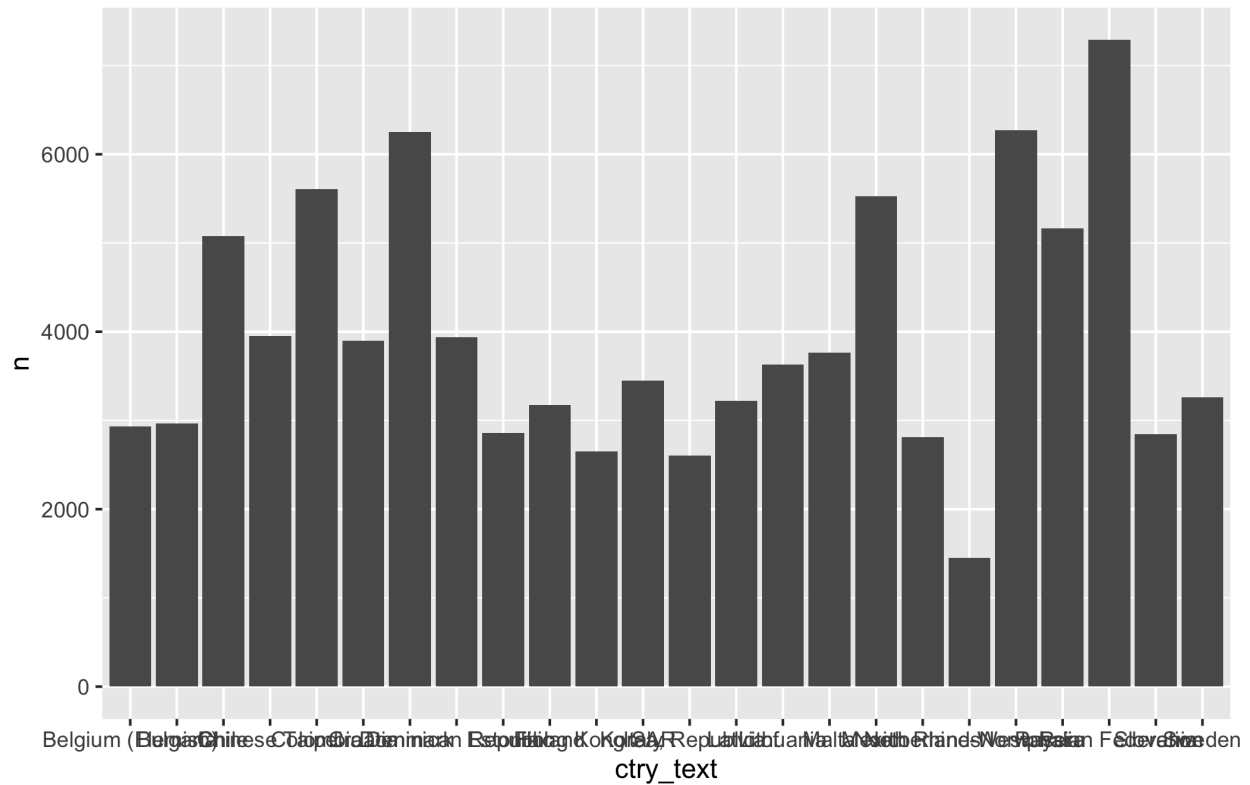
#-----
# nombres de países
#-----

data_plot <- data_model %>%
  dplyr::count(ctry_text) %>%
  arrange(n)

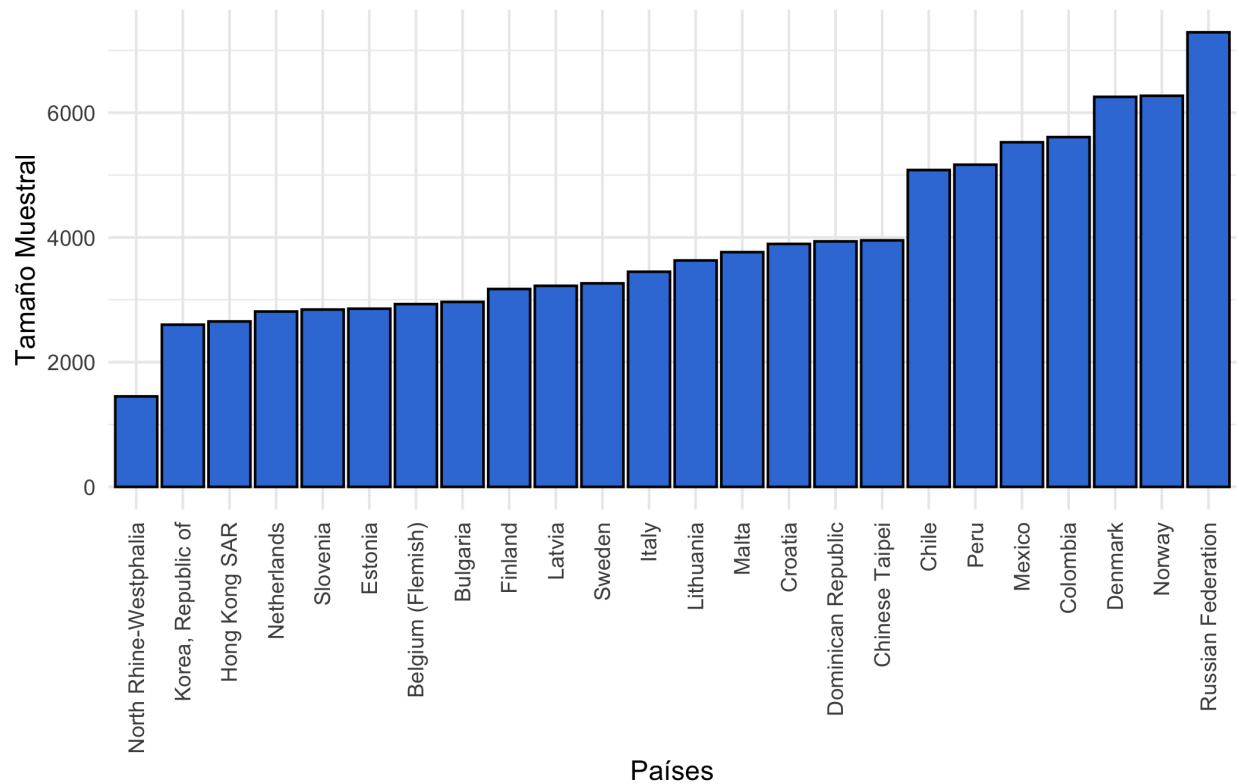
#-----
# gráfico simple
#-----

library(ggplot2)
ggplot(
  data = data_plot,
  aes(
    x = ctry_text,
    y = n
  )
)
```

```
) +  
geom_bar(stat="identity")
```



```
#-----  
# gráfico editado  
#-----  
  
library(ggplot2)  
ggplot(  
  data = data_plot, # datos a graficar  
  aes(  
    x = reorder(ctry_text, n), # reorden de las barras a graficar  
    y = n # vector que contiene las cifras que se grafican  
  )  
  ) +  
  geom_bar(  
    colour = "black", # objeto empleado para visualizar barras  
    stat = "identity", # color de los bordes de las barras  
    fill = "#397CDA" # especifica que se emplean las cifras de la tabla  
  ) + # especifica el color de las barras en su interior  
  theme_minimal() + # aplica un template basico de plot  
  ylab('Tamaño Muestral') + # indica el titulo del eje y  
  xlab('Países') + # indica el titulo del eje x  
  guides(  
    x = guide_axis(angle = 90) # edita la dirección del texto del eje x  
  )
```



Cantidad de escuelas por país

```
#-----
# cantidad de escuelas
#-----

#-----
# seleccionar variables y y filtrar casos críticos
#-----

data_schools <- data_model %>%
  # conservar solo las variables que necesitamos: paises y escuelas
  dplyr::select(ctry_text, IDSCHOOL) %>%
  # eliminar todos los casos redundantes
  unique()

# Nota: si seleccionamos solo las variables de país (ctry_text)
#       y escuela (IDSCHOOL), ahora tenemos una gran tabla
#       que tiene a los casos de estudiantes, de cada escuela, en cada país.
#       Lo anterior, lo logramos aplicando la función 'dplyr::select()'.
#       Debido a que queremos solo la información de las escuelas, necesitamos
#       solo conservar la información "no redundante". Es decir,
#       necesitamos la cantidad de escuelas de cada país. Aplicamos
#       la función "unique()". En esta secuencia, el resultado de "unique()" es
#       una tabla que contiene a cada país, y una fila por cada escuela.
```

```

#-----
# tabla de cantidad de escuelas por país
#-----

xtabs(~ ctry_text, data = data_schools) %>%
tibble::as_tibble() %>%
knitr::kable()

```

ctry_text	n
Belgium (Flemish)	162
Bulgaria	147
Chile	178
Chinese Taipei	141
Colombia	150
Croatia	175
Denmark	184
Dominican Republic	141
Estonia	164
Finland	179
Hong Kong SAR	91
Italy	170
Korea, Republic of	93
Latvia	147
Lithuania	182
Malta	47
Mexico	213
Netherlands	123
North Rhine-Westphalia	59
Norway	148
Peru	206
Russian Federation	352
Slovenia	145
Sweden	155

```

# Nota: podemos transformar el reusltados de "xtabs" a una tabla
#      tipo tibble, y luego este objeto lo podemos
#      mostrar como una tabla en la consola.

```

```

#-----
# tabla de cantidad de escuelas por país
#-----

dplyr::count(data_schools, ctry_text)

```

```

## # A tibble: 24 x 2
##   ctry_text      n
##   <chr>      <int>
## 1 Belgium (Flemish) 162
## 2 Bulgaria         147
## 3 Chile            178
## 4 Chinese Taipei   141

```

```
## 5 Colombia          150
## 6 Croatia           175
## 7 Denmark           184
## 8 Dominican Republic 141
## 9 Estonia           164
## 10 Finland          179
## # ... with 14 more rows
```

```
# Nota: el resultado de "dplyr::count()" es muy similar al
# conjunto de funciones aplicadas en la secuencia anterior.
```

Gráfico de cantidad de escuelas por país (via barplot)

```
#-----
# casos por país
#-----

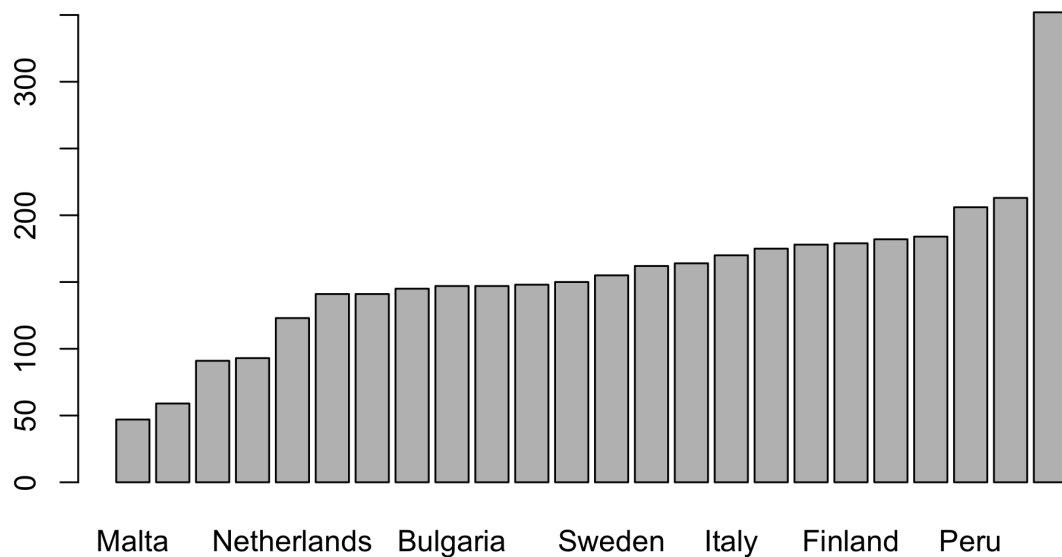
#-----
# nombres de países
#-----

sample_j <- data_schools %>%
  dplyr::count(ctry_text) %>%
  arrange(n)

# Nota: a la tabla que describe la cantidad de casos, la llamaremos
# 'sample_i'; mientras que a la tabla de escuelas, la llamaremos
# 'sample_j'. En datos que se encuentran anidados, es muy comun
# refereir a los casos como "i" (de 1 a n), y referir
# a los clusters como "j" (de 1 a n). De modo tal, que se
# habla del caso "i" en el cluster "j" (e.g., estudiante "i", en la escuela "j").

#-----
# gráfico simple
#-----

barplot(
  height = sample_j$n,          # cifra graficada
  names.arg = sample_j$ctry_text, # nombres de cada barra en eje x
)
```



```
#-----
# gráfico editado
#-----

# definir margenes del plot
par(mar=c(10,4,4,4))

# 'mar' A numerical vector of the form 'c(bottom, left, top, right)'
#       which gives the number of lines of margin to be specified on
#       the four sides of the plot. The default is 'c(5, 4, 4, 2) +
#       0.1'.

barplot(
  height = sample_j$n,           # cifra graficada
  names.arg = sample_j$ctry_text, # nombres de cada barra en eje x
  col = c('#397CDA'),           # color de barras
  las=2,                         # mueve los nombres de cada barra en perpendicular al graficp
  cex.names=.8                  # tamaño de los textos
)
```

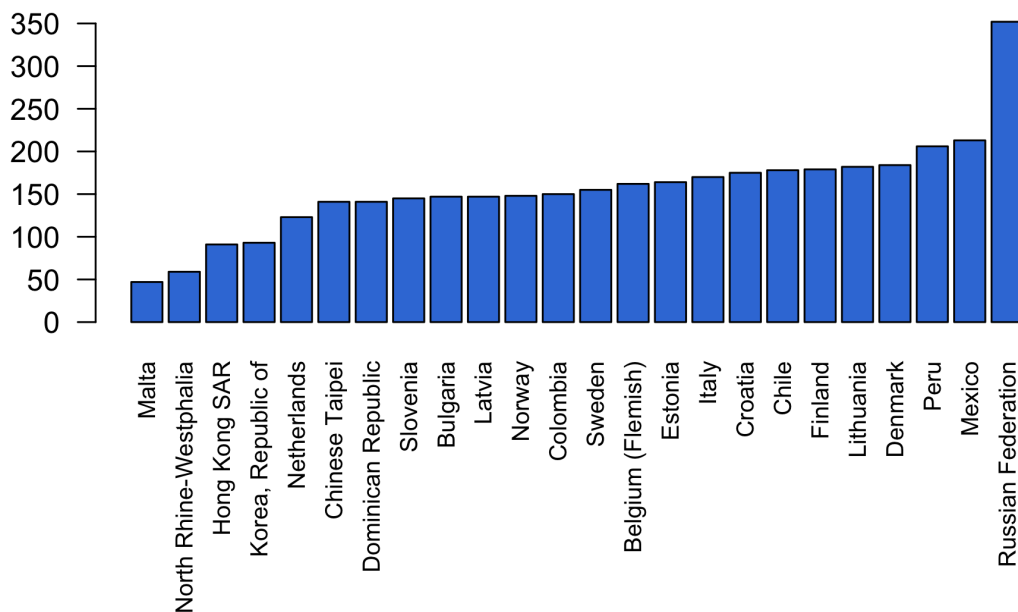


Gráfico de cantidad de escuelas por país (via ggplot)

```
#-----
# casos por país
#-----

#-----
# nombres de países
#-----

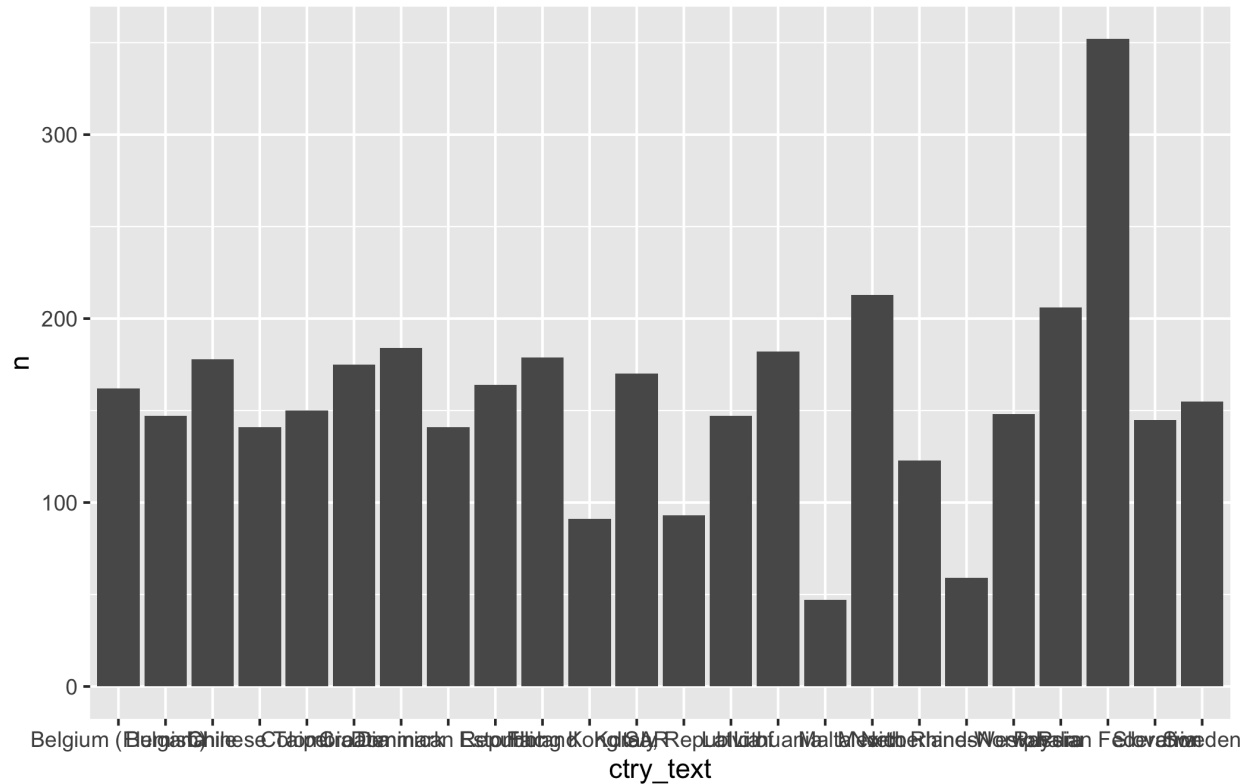
sample_j <- data_schools %>%
  dplyr::count(ctry_text) %>%
  arrange(n)

# Nota: a la tabla que describe la cantidad de casos, la llamaremos
#       'sample_i'; mientras que a la tabla de escuelas, la llamaremos
#       'sample_j'. En datos que se encuentran anidados, es muy comun
#       referir a los casos como "i" (de 1 a n), y referir
#       a los clusters como "j" (de 1 a n). De modo tal, que se
#       habla del caso "i" en el cluster "j" (e.g., estudiante "i", en la escuela "j").

#-----
# gráfico simple
#-----
```



```
library(ggplot2)
ggplot(
  data = sample_j,
  aes(
    x = ctry_text,
    y = n
  )
) +
  geom_bar(stat="identity")
```



```
#-----
# gráfico editado
#-----

library(ggplot2)
ggplot(
  data = sample_j,
  aes(
    x = reorder(ctry_text, n),
    y = n
  )
) +
  geom_bar(
    colour = "black",
    stat = "identity",
    fill = "#397CDA"
  ) +
```

datos a graficar

reorden de las barras a graficar

vector que contiene las cifras que se grafican

objeto empleado para visualizar barras

color de los bordes de las barras

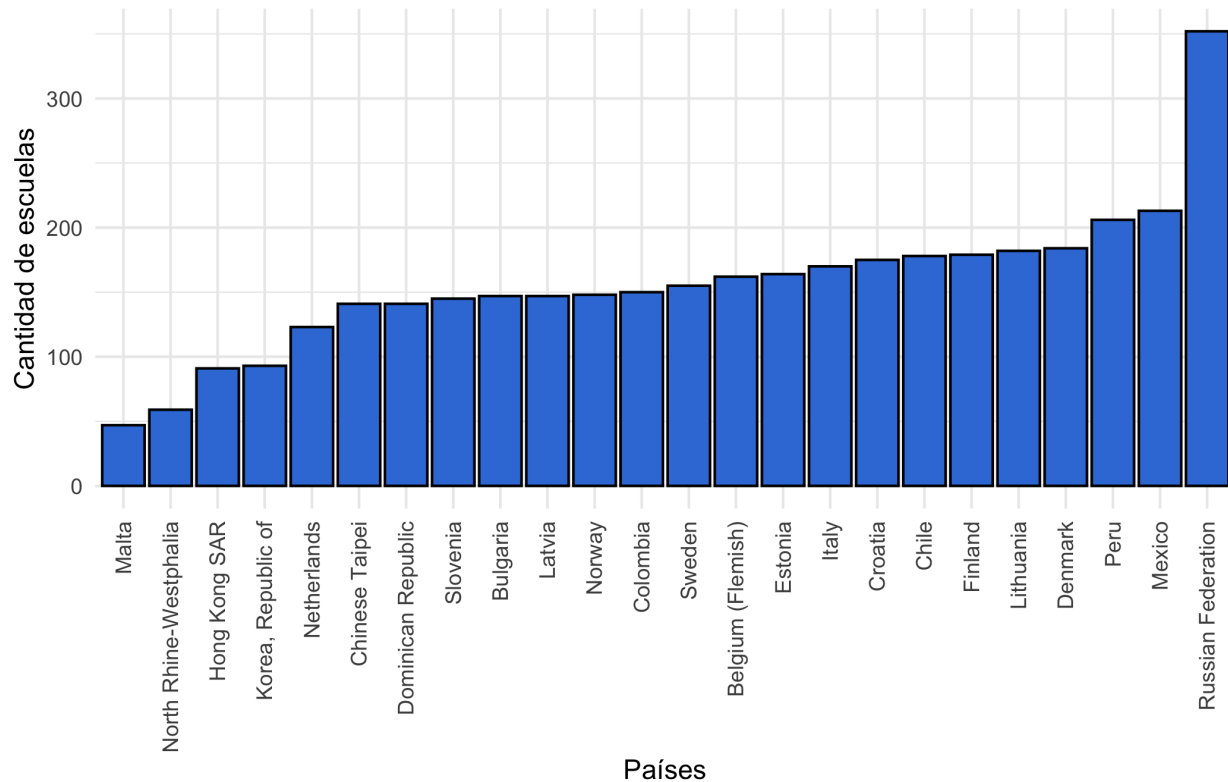
especifica que se emplean las cifras de la tabla

especifica el color de las barras en su interior

```

theme_minimal() +                                # aplica un template basico de plot
ylab('Cantidad de escuelas') +                    # indica el titulo del eje y
xlab('Países') +                                  # indica el titulo del eje x
guides(                                             # edita la dirección del texto del eje x
  x = guide_axis(angle = 90)
)

```



Tipos de cluster

Los datos de ICCS 2016, incluye a muestras representativas de estudiantes de cada país. Se muestrean escuelas, y dentro de las escuelas, se muestrean estudiantes de una misma sala de clases. Cada país tiene diferentes tipos de escuelas. Una clasificación común a varios países participantes, son las escuelas **privadas**.

Para obtener descriptivos de la cantidad de escuelas de cada tipo, emplearemos las siguientes variables:

- La variable país es 'IDCNTRY'
- La variable escuela es 'IDSCHOOL'
- La variable escuela es 'C_PRIVATE' + Valores de la variable C_PRIVATE

```

value label
<chr> <chr>
1 0    Public school
2 1    Private school
3 7    Invalid
4 8    Not administered
5 9    Omitted

```

Cantidad de escuelas por tipo en toda la muestra

```
#-----  
# cantidad de escuelas por país  
#-----  
  
#-----  
# seleccionar variables y y filtrar casos críticos  
#-----  
  
school_type <- data_model %>%  
  # conservar solo las variables que necesitamos: países y escuelas  
  dplyr::select(ctry_text, IDSCHOOL, C_PRIVATE) %>%  
  # eliminar todos los casos redundantes  
  unique()  
  
# Nota: si seleccionamos solo las variables de país (ctry_text)  
#       y escuela (IDSCHOOL), ahora tenemos una gran tabla  
#       que tiene a los casos de estudiantes, de cada escuela, en cada país.  
#       Lo anterior, lo logramos aplicando la función 'dplyr::select()'.  
#       Debido a que queremos solo la información de las escuelas, necesitamos  
#       solo conservar la información "no redundante". Es decir,  
#       necesitamos la cantidad de escuelas de cada país. Aplicamos  
#       la función "unique()". En esta secuencia, el resultado de "unique()" es  
#       una tabla que contiene a cada país, y una fila por cada escuela.  
  
#-----  
# cantidad de casos por país via table()  
#-----  
  
table(school_type$C_PRIVATE)  
  
##  
##      0      1  
## 2932  596  
  
#-----  
# cantidad de casos por país via table() incluyendo NA  
#-----  
  
table(school_type$C_PRIVATE, useNA = "always")  
  
##  
##      0      1 <NA>  
## 2932  596  224  
  
#-----  
# cantidad de casos por país via table() y with()  
#-----  
  
with(school_type, table(C_PRIVATE))
```

```
## C_PRIVATE
##      0      1
## 2932  596
```

```
# Nota: ocupamos la función with() de modo que la función table()
#       resuelve los resultados, empleando a la tabla de datos
#       'school_type'
```

```
#-----
# cantidad de casos por país via xtabs()
#-----
```

```
xtabs(~ C_PRIVATE, data = school_type)
```

```
## C_PRIVATE
##      0      1
## 2932  596
```

```
#-----
# cantidad de casos por país via xtabs() incluyendo a los NA
#-----
```

```
xtabs(~ C_PRIVATE, data = school_type, addNA = TRUE)
```

```
## C_PRIVATE
##      0      1 <NA>
## 2932  596  224
```

```
#-----
# cantidad de casos por país via dplyr::count
#-----
```

```
school_type %>%
dplyr::count(C_PRIVATE) %>%
knitr::kable()
```

C_PRIVATE	n
0	2932
1	596
	224

```
# Nota: la función dplyr::count() cuenta a todos los casos posibles.
#       Lo anterior, incluye a las escuelas sin clasificación.
```

```
#-----
# tabla tipo APA (empleando base)
#-----
```

```
tabla_1 <- table(school_type$C_PRIVATE, useNA = "always")
```

```

tabla_1 <- as.data.frame(tabla_1)
tabla_1$n <- tabla_1$Freq
tabla_1$porcentaje <- tabla_1$Freq/sum(tabla_1$Freq)
tabla_1$tipo <- NA
tabla_1$tipo[is.na(tabla_1$Var1)] <- 'Sin información'
tabla_1$tipo[tabla_1$Var1==0] <- 'Públicas'
tabla_1$tipo[tabla_1$Var1==1] <- 'Privadas'
tabla_1 <- tabla_1[c('tipo','n','porcentaje')]
tabla_1

```

```

##           tipo      n porcentaje
## 1     Públicas 2932      0.78
## 2     Privadas  596      0.16
## 3 Sin información 224      0.06

```

```
knitr::kable(tabla_1)
```

tipo	n	porcentaje
Públicas	2932	0.78
Privadas	596	0.16
Sin información	224	0.06

```

#-----
# tabla tipo APA (empleando dplyr)
#-----

table_1 <- school_type %>%
  dplyr::count(C_PRIVATE) %>%
  mutate(tipo = case_when(
    C_PRIVATE == 0 ~ 'Públicas',
    C_PRIVATE == 1 ~ 'Privadas',
    TRUE ~ 'Sin información'
  )) %>%
  mutate(porcentaje = n/sum(n)) %>%
  dplyr::select(tipo, n, porcentaje)

knitr::kable(table_1)

```

tipo	n	porcentaje
Públicas	2932	0.78
Privadas	596	0.16
Sin información	224	0.06

Cantidad de escuelas por tipo en cada país

```

#-----
# cantidad de escuelas por país

```

```

#-----

#-----
# seleccionar variables y y filtrar casos críticos
#-----

school_type <- data_model %>%
  # conservar solo las variables que necesitamos: países y escuelas
  dplyr::select(ctry_text, IDSCHOOL, C_PRIVATE) %>%
  # eliminar todos los casos redundantes
  unique()

# Nota: si seleccionamos solo las variables de país (ctry_text)
#       y escuela (IDSCHOOL), ahora tenemos una gran tabla
#       que tiene a los casos de estudiantes, de cada escuela, en cada país.
#       Lo anterior, lo logramos aplicando la función 'dplyr::select()'.
#       Debido a que queremos solo la información de las escuelas, necesitamos
#       solo conservar la información "no redundante". Es decir,
#       necesitamos la cantidad de escuelas de cada país. Aplicamos
#       la función "unique()". En esta secuencia, el resultado de "unique()" es
#       una tabla que contiene a cada país, y una fila por cada escuela.

#-----
# cantidad de casos por país via table()
#-----

table(school_type$ctry_text, school_type$C_PRIVATE)

```

```

##
##           0    1
## Belgium (Flemish)  35 114
## Bulgaria          140   5
## Chile              67  91
## Chinese Taipei    125  15
## Colombia          100  28
## Croatia           172   0
## Denmark           135  44
## Dominican Republic  99  28
## Estonia           103   2
## Finland           166   8
## Hong Kong SAR      64  24
## Italy              159   4
## Korea, Republic of  72  21
## Latvia            133   3
## Lithuania          179   3
## Malta              18   29
## Mexico            184  29
## Netherlands        47  56
## North Rhine-Westphalia 40  10
## Norway            138   4
## Peru              156  50

```

```
## Russian Federation      350  2
## Slovenia                134  1
## Sweden                  116 25
```

```
#-----
# cantidad de casos por país via table() y with()
#-----
```

```
with(school_type, table(ctr_text, C_PRIVATE))
```

```
##                               C_PRIVATE
## ctr_text                      0    1
## Belgium (Flemish)             35 114
## Bulgaria                     140   5
## Chile                        67  91
## Chinese Taipei               125  15
## Colombia                    100  28
## Croatia                     172   0
## Denmark                     135  44
## Dominican Republic           99  28
## Estonia                     103   2
## Finland                     166   8
## Hong Kong SAR                 64  24
## Italy                        159   4
## Korea, Republic of           72  21
## Latvia                      133   3
## Lithuania                    179   3
## Malta                       18   29
## Mexico                      184  29
## Netherlands                  47  56
## North Rhine-Westphalia       40  10
## Norway                      138   4
## Peru                        156  50
## Russian Federation           350   2
## Slovenia                    134   1
## Sweden                      116  25
```

```
# Nota: ocupamos la funcion with() de modo que la función table()
#       resuelve los resultados, empleando a la tabla de datos
#       'school_type'
```

```
#-----
# cantidad de casos por país via xtabs()
#-----
```

```
xtabs(~ ctr_text + C_PRIVATE, data = school_type)
```

```
##                               C_PRIVATE
## ctr_text                      0    1
## Belgium (Flemish)             35 114
## Bulgaria                     140   5
## Chile                        67  91
## Chinese Taipei               125  15
```

```
## Colombia 100 28
## Croatia 172 0
## Denmark 135 44
## Dominican Republic 99 28
## Estonia 103 2
## Finland 166 8
## Hong Kong SAR 64 24
## Italy 159 4
## Korea, Republic of 72 21
## Latvia 133 3
## Lithuania 179 3
## Malta 18 29
## Mexico 184 29
## Netherlands 47 56
## North Rhine-Westphalia 40 10
## Norway 138 4
## Peru 156 50
## Russian Federation 350 2
## Slovenia 134 1
## Sweden 116 25
```

```
#-----
# cantidad de casos por país via dplyr::count
#-----

school_type %>%
dplyr::count(ctry_text, C_PRIVATE) %>%
tidyr::spread(
  key = 'C_PRIVATE',
  value = 'n'
) %>%
knitr::kable()
```

ctry_text	0	1	
Belgium (Flemish)	35	114	13
Bulgaria	140	5	2
Chile	67	91	20
Chinese Taipei	125	15	1
Colombia	100	28	22
Croatia	172		3
Denmark	135	44	5
Dominican Republic	99	28	14
Estonia	103	2	59
Finland	166	8	5
Hong Kong SAR	64	24	3
Italy	159	4	7
Korea, Republic of	72	21	
Latvia	133	3	11
Lithuania	179	3	
Malta	18	29	
Mexico	184	29	
Netherlands	47	56	20

ctry_text	0	1	
North Rhine-Westphalia	40	10	9
Norway	138	4	6
Peru	156	50	
Russian Federation	350	2	
Slovenia	134	1	10
Sweden	116	25	14

```
# Nota: la función dplyr::count() cuenta a todos los casos posibles.
#      Lo anterior, incluye a las escuelas sin clasificación.
```

Cantidad de escuelas por tipo en cada país en porcentajes por país

```
#-----
# cantidad de escuelas por país
#-----

#-----
# seleccionar variables y y filtrar casos críticos
#-----

school_type <- data_model %>%
  # conservar solo las variables que necesitamos: países y escuelas
  dplyr::select(ctry_text, IDSCHOOL, C_PRIVATE) %>%
  # eliminar todos los casos redundantes
  unique()

# Nota: si seleccionamos solo las variables de país (ctry_text)
#      y escuela (IDSCHOOL), ahora tenemos una gran tabla
#      que tiene a los casos de estudiantes, de cada escuela, en cada país.
#      Lo anterior, lo logramos aplicando la función 'dplyr::select()'.
#      Debido a que queremos solo la información de las escuelas, necesitamos
#      solo conservar la información "no redundante". Es decir,
#      necesitamos la cantidad de escuelas de cada país. Aplicamos
#      la función "unique()". En esta secuencia, el resultado de "unique()" es
#      una tabla que contiene a cada país, y una fila por cada escuela.

#-----
# cantidad de casos por país via table()
#-----

table(school_type$ctry_text, school_type$C_PRIVATE) %>%
proportions(margin = 1)

##
##              0      1
## Belgium (Flemish) 0.2349 0.7651
## Bulgaria          0.9655 0.0345
```

```
## Chile 0.4241 0.5759
## Chinese Taipei 0.8929 0.1071
## Colombia 0.7812 0.2188
## Croatia 1.0000 0.0000
## Denmark 0.7542 0.2458
## Dominican Republic 0.7795 0.2205
## Estonia 0.9810 0.0190
## Finland 0.9540 0.0460
## Hong Kong SAR 0.7273 0.2727
## Italy 0.9755 0.0245
## Korea, Republic of 0.7742 0.2258
## Latvia 0.9779 0.0221
## Lithuania 0.9835 0.0165
## Malta 0.3830 0.6170
## Mexico 0.8638 0.1362
## Netherlands 0.4563 0.5437
## North Rhine-Westphalia 0.8000 0.2000
## Norway 0.9718 0.0282
## Peru 0.7573 0.2427
## Russian Federation 0.9943 0.0057
## Slovenia 0.9926 0.0074
## Sweden 0.8227 0.1773
```

```
#-----
# cantidad de casos por país via table() y with()
#-----

with(school_type, table(ctry_text, C_PRIVATE)) %>%
proportions(margin = 1)
```

```
## C_PRIVATE
## ctry_text 0 1
## Belgium (Flemish) 0.2349 0.7651
## Bulgaria 0.9655 0.0345
## Chile 0.4241 0.5759
## Chinese Taipei 0.8929 0.1071
## Colombia 0.7812 0.2188
## Croatia 1.0000 0.0000
## Denmark 0.7542 0.2458
## Dominican Republic 0.7795 0.2205
## Estonia 0.9810 0.0190
## Finland 0.9540 0.0460
## Hong Kong SAR 0.7273 0.2727
## Italy 0.9755 0.0245
## Korea, Republic of 0.7742 0.2258
## Latvia 0.9779 0.0221
## Lithuania 0.9835 0.0165
## Malta 0.3830 0.6170
## Mexico 0.8638 0.1362
## Netherlands 0.4563 0.5437
## North Rhine-Westphalia 0.8000 0.2000
## Norway 0.9718 0.0282
## Peru 0.7573 0.2427
## Russian Federation 0.9943 0.0057
```

```
## Slovenia          0.9926 0.0074
## Sweden            0.8227 0.1773
```

```
# Nota: ocupamos la funcion with() de modo que la función table()
#       resuelve los resultados, empleando a la tabla de datos
#       'school_type'
```

```
#-----
# cantidad de casos por país via xtabs()
#-----
```

```
xtabs(~ ctry_text + C_PRIVATE, data = school_type) %>%
proportions(margin = 1)
```

```
##                C_PRIVATE
## ctry_text          0      1
## Belgium (Flemish)  0.2349 0.7651
## Bulgaria          0.9655 0.0345
## Chile             0.4241 0.5759
## Chinese Taipei    0.8929 0.1071
## Colombia          0.7812 0.2188
## Croatia           1.0000 0.0000
## Denmark           0.7542 0.2458
## Dominican Republic 0.7795 0.2205
## Estonia           0.9810 0.0190
## Finland           0.9540 0.0460
## Hong Kong SAR     0.7273 0.2727
## Italy              0.9755 0.0245
## Korea, Republic of 0.7742 0.2258
## Latvia            0.9779 0.0221
## Lithuania          0.9835 0.0165
## Malta              0.3830 0.6170
## Mexico            0.8638 0.1362
## Netherlands       0.4563 0.5437
## North Rhine-Westphalia 0.8000 0.2000
## Norway            0.9718 0.0282
## Peru              0.7573 0.2427
## Russian Federation 0.9943 0.0057
## Slovenia          0.9926 0.0074
## Sweden            0.8227 0.1773
```

```
#-----
# cantidad de casos por país via dplyr::count
#-----
```

```
school_type %>%
dplyr::count(ctry_text, C_PRIVATE) %>%
tidyr::spread(
  key = 'C_PRIVATE',
  value = 'n'
) %>%
rename(
  publicas = 2,
```

```

privadas = 3,
sin_info = 4
) %>%
mutate(n_tot = rowSums(cbind(publicas, privadas, sin_info), na.rm=TRUE)) %>%
mutate(p_pub = publicas/n_tot) %>%
mutate(p_pri = privadas/n_tot) %>%
mutate(p_sin = sin_info/n_tot) %>%
dplyr::select(
  ctry_text,
  n_tot,
  publicas,
  privadas,
  sin_info,
  p_pub,
  p_pri,
  p_sin
) %>%
knitr::kable()

```

ctry_text	n_tot	publicas	privadas	sin_info	p_pub	p_pri	p_sin
Belgium (Flemish)	162	35	114	13	0.22	0.70	0.08
Bulgaria	147	140	5	2	0.95	0.03	0.01
Chile	178	67	91	20	0.38	0.51	0.11
Chinese Taipei	141	125	15	1	0.89	0.11	0.01
Colombia	150	100	28	22	0.67	0.19	0.15
Croatia	175	172		3	0.98		0.02
Denmark	184	135	44	5	0.73	0.24	0.03
Dominican Republic	141	99	28	14	0.70	0.20	0.10
Estonia	164	103	2	59	0.63	0.01	0.36
Finland	179	166	8	5	0.93	0.04	0.03
Hong Kong SAR	91	64	24	3	0.70	0.26	0.03
Italy	170	159	4	7	0.94	0.02	0.04
Korea, Republic of	93	72	21		0.77	0.23	
Latvia	147	133	3	11	0.90	0.02	0.07
Lithuania	182	179	3		0.98	0.02	
Malta	47	18	29		0.38	0.62	
Mexico	213	184	29		0.86	0.14	
Netherlands	123	47	56	20	0.38	0.46	0.16
North Rhine-Westphalia	59	40	10	9	0.68	0.17	0.15
Norway	148	138	4	6	0.93	0.03	0.04
Peru	206	156	50		0.76	0.24	
Russian Federation	352	350	2		0.99	0.01	
Slovenia	145	134	1	10	0.92	0.01	0.07
Sweden	155	116	25	14	0.75	0.16	0.09

Nota: la función dplyr::count() cuenta a todos los casos posibles.
Lo anterior, incluye a las escuelas sin clasificación.

Datos por cluster

Preparar datos

```
#-----  
# preparar datos  
#-----  
  
#-----  
# preparar datos  
#-----  
  
school_data <- data_model %>%  
  # conservar solo las variables que necesitamos: paises y escuelas  
  dplyr::select(IDCNTY, ctry_text, IDSCHOOL, C_PRIVATE, PV1CIV) %>%  
  # preparar datos  
  mutate(id_k = as.factor(paste0(IDCNTY))) %>%  
  mutate(id_k = as.numeric(id_k)) %>%  
  mutate(id_j = as.factor(paste0(IDCNTY, "_",IDSCHOOL))) %>%  
  mutate(id_j = as.numeric(id_j)) %>%  
  mutate(y_ij = PV1CIV) %>%  
  mutate(y_j = psi2301::c_mean(y_ij, id_j)) %>%  
  mutate(adm = case_when(  
    C_PRIVATE == 0 ~ 'Públicas',  
    C_PRIVATE == 1 ~ 'Privadas',  
    TRUE ~ 'Sin información')) %>%  
  dplyr::select(id_k, ctry_text, id_j, adm, y_j) %>%  
  # eliminar todos los casos redundantes  
  unique()
```

Distribuciones de puntajes de escuelas

Obtener datos de una escuela

```
#-----  
# resultados por escuela  
#-----  
  
#-----  
# mostrar solo el dato de puntaje (via codigo base)  
#-----  
  
school_data[school_data$id_j == 3591, 'y_j']  
  
## # A tibble: 1 x 1  
##   y_j  
##   <dbl>  
## 1  633.
```

```
#-----
# mostrar toda la fila de puntaje (via codigo base)
#-----

school_data[school_data$id_j == 3591,]
```

```
## # A tibble: 1 x 5
##   id_k ctry_text      id_j adm      y_j
##   <dbl> <chr>      <dbl> <chr>   <dbl>
## 1    24 Belgium (Flemish) 3591 Privadas 633.
```

```
#-----
# mostrar solo el dato de puntaje (via dplyr)
#-----

school_data %>%
dplyr::filter(id_j == 3591) %>%
dplyr::select(y_j) %>%
knitr::kable()
```

y_j
633

```
#-----
# mostrar toda la fila de puntaje (via dplyr)
#-----

school_data %>%
dplyr::filter(id_j == 3591) %>%
knitr::kable()
```

id_k	ctry_text	id_j	adm	y_j
24	Belgium (Flemish)	3591	Privadas	633

Distribuciones de puntajes de escuelas

Histogramas con Base

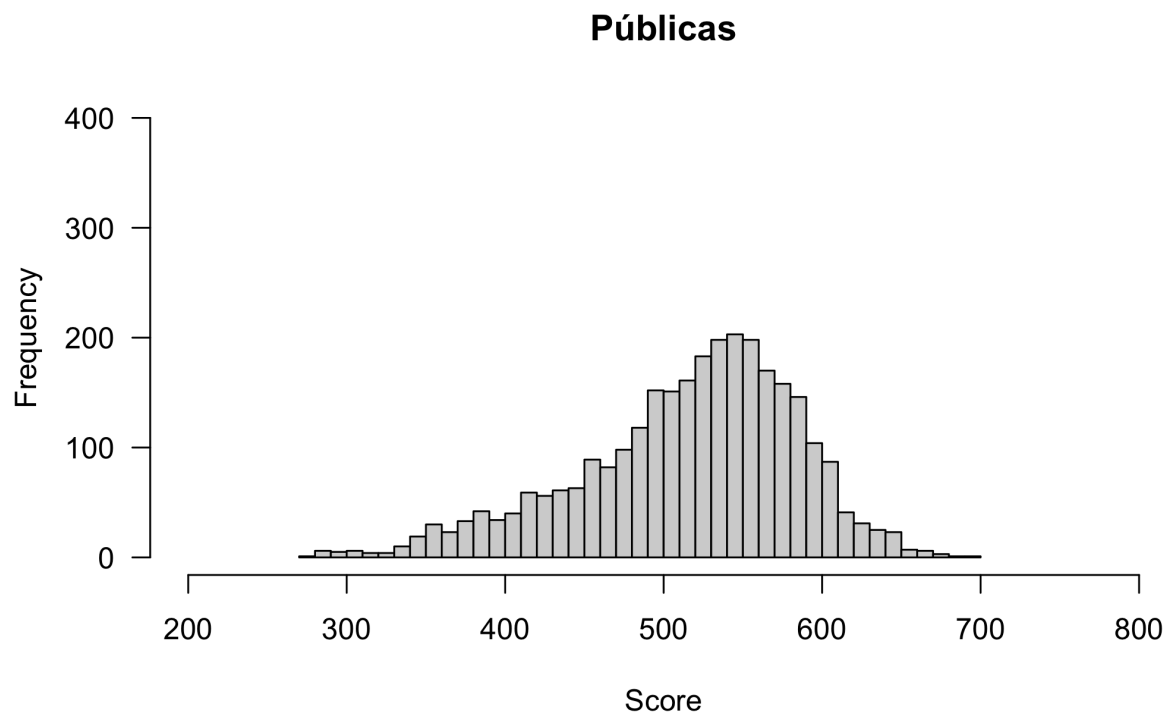
```
#-----
# histogramas para visualizar distribuciones
#-----

#-----
# via hist
#-----
```

```

par(mfrow = c(1,1))
hist(school_data$y_j[school_data$adm=='Públicas'],
     breaks = 40,
     las = 1,
     ylim=c(0,400),
     xlim=c(200,800),
     xlab = 'Score',
     main = 'Públicas'
    )

```

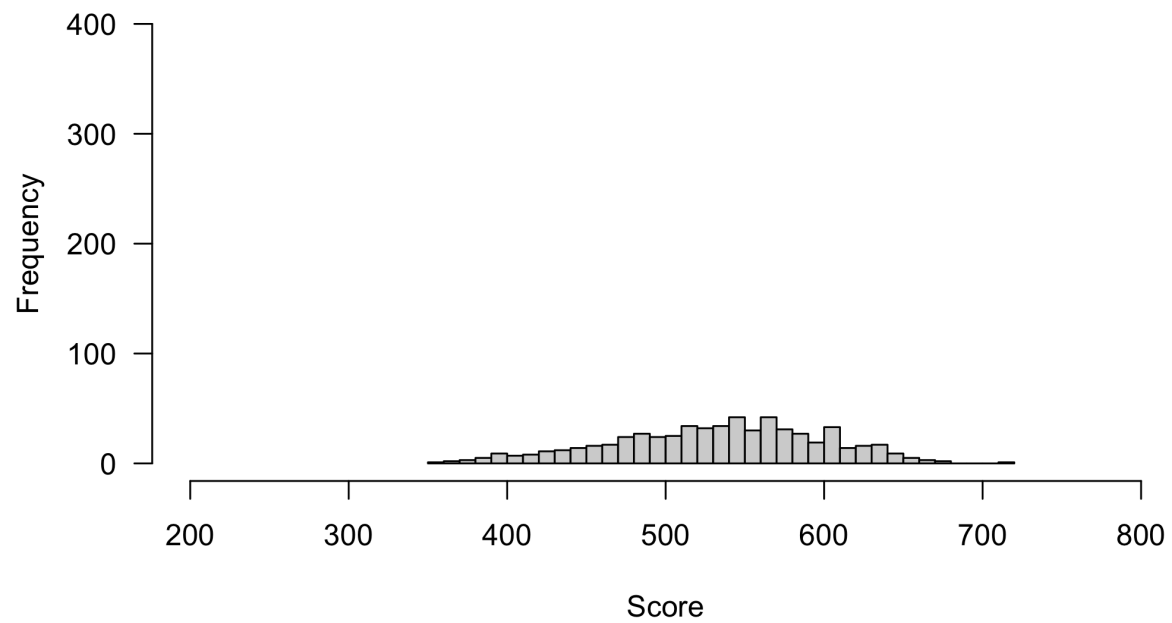


```

par(mfrow = c(1,1))
hist(school_data$y_j[school_data$adm=='Privadas'],
     breaks = 40,
     las = 1,
     ylim=c(0,400),
     xlim=c(200,800),
     xlab = 'Score',
     main = 'Privadas'
    )

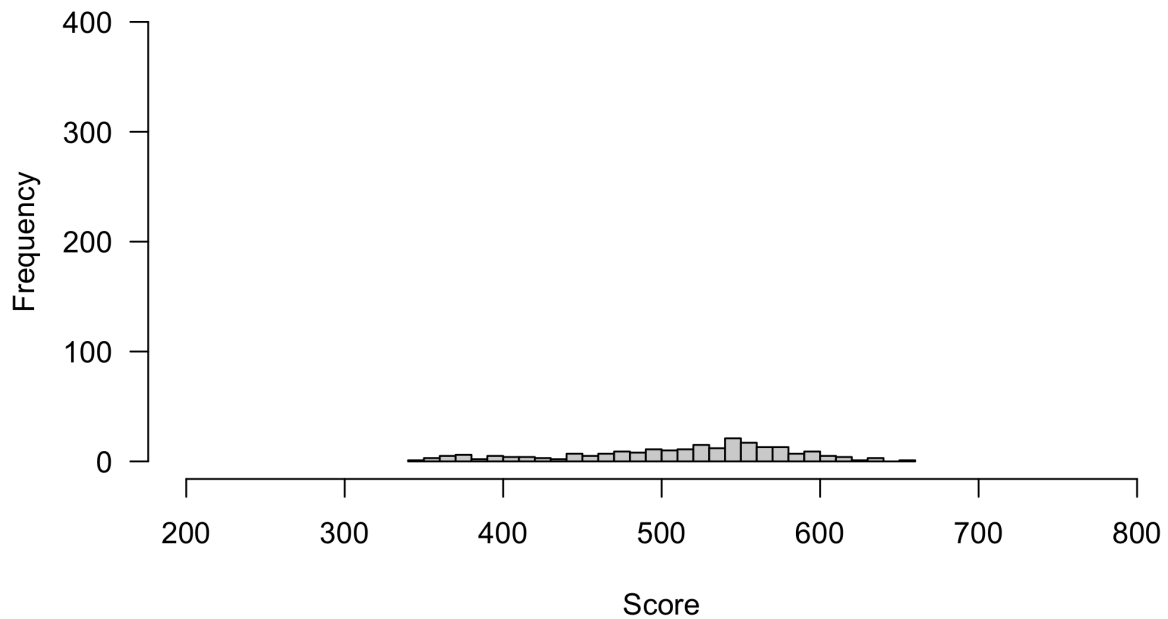
```

Privadas



```
par(mfrow = c(1,1))
hist(school_data$y_j[school_data$adm=='Sin información'],
      breaks = 40,
      las = 1,
      ylim=c(0,400),
      xlim=c(200,800),
      xlab = 'Score',
      main = 'Sin información'
    )
```


Sin información



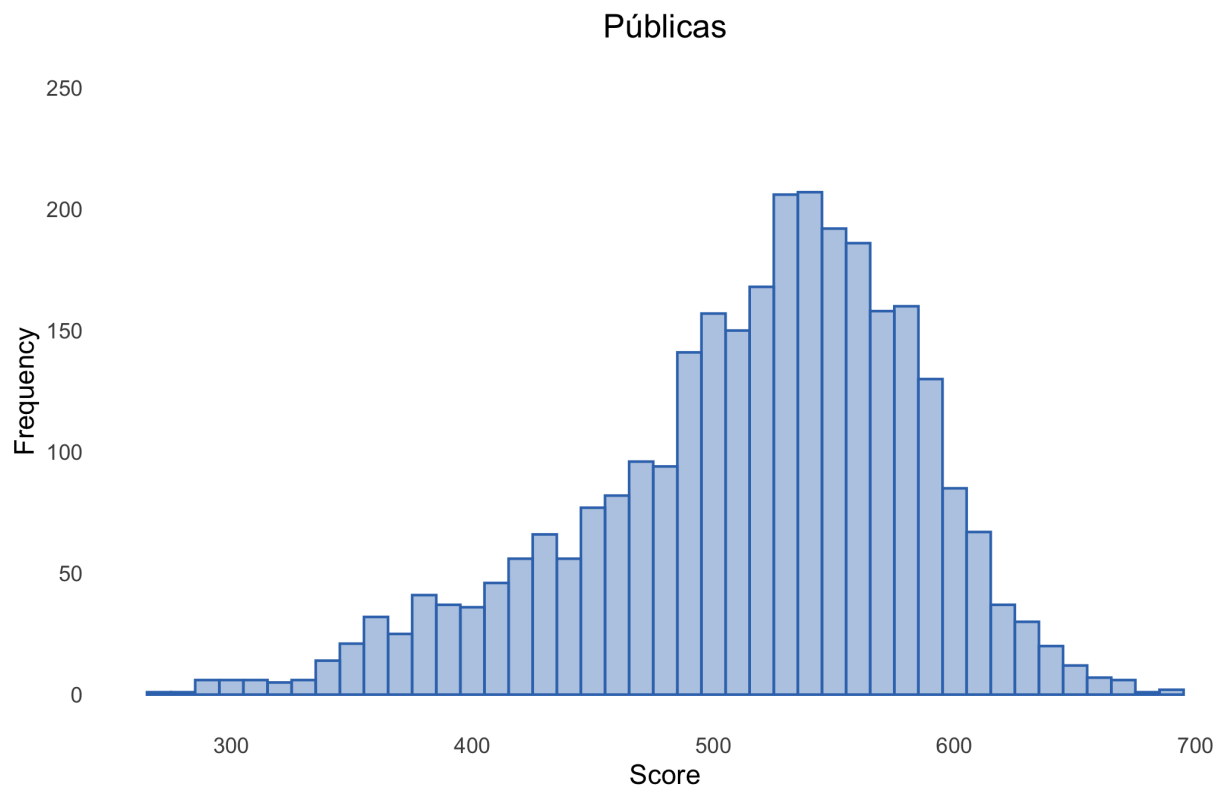
Histogramas con ggplot

```
#-----  
# histogramas para visualizar distribuciones  
#-----  
  
#-----  
# via ggplot  
#-----  
  
library(ggplot2)  
plot_1 <- school_data %>%  
  dplyr::filter(adm == 'Públicas') %>%  
  ggplot(. , aes(x = y_j)) +  
  geom_histogram(  
    position = "identity",  
    alpha = 0.4,  
    color = '#3876BA',  
    fill = '#3876BA',  
    binwidth = 10  
  ) +  
  xlab('Score') +  
  ylab('Frequency') +  
  labs(title="Públicas") +  
  ylim(c(0,250)) +  
  theme_minimal() +
```

```

theme(
  panel.background = element_blank(),
  panel.grid.minor = element_blank(),
  panel.grid.major = element_blank(),
  axis.ticks = element_blank(),
  plot.title = element_text(hjust = 0.5)
)
plot_1

```



```

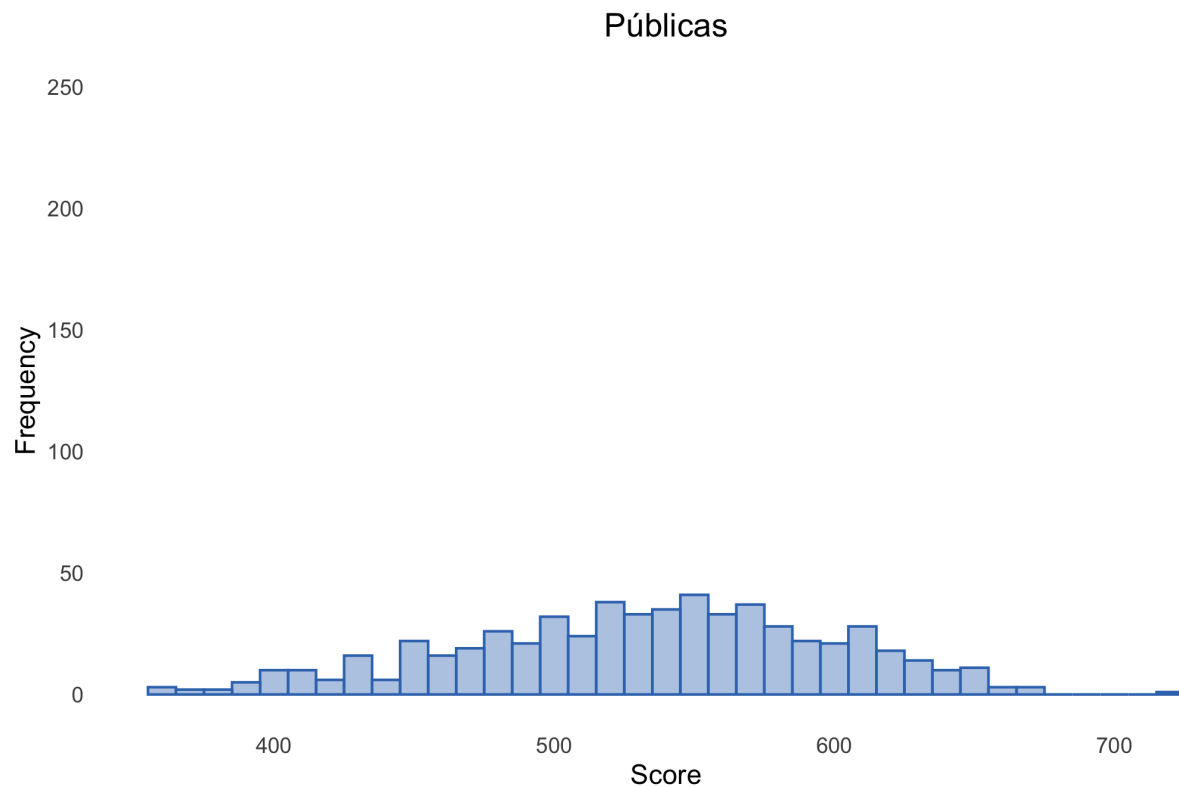
library(ggplot2)
plot_2 <- school_data %>%
  dplyr::filter(adm == 'Privadas') %>%
  ggplot(. , aes(x = y_j)) +
  geom_histogram(
    position = "identity",
    alpha = 0.4,
    color = '#3876BA',
    fill = '#3876BA',
    binwidth = 10
  ) +
  xlab('Score') +
  ylab('Frequency') +
  labs(title="Públicas") +
  ylim(c(0,250)) +
  theme_minimal() +
  theme(
    panel.background = element_blank(),

```

```

panel.grid.minor = element_blank(),
panel.grid.major = element_blank(),
axis.ticks = element_blank(),
plot.title = element_text(hjust = 0.5)
)
plot_2

```

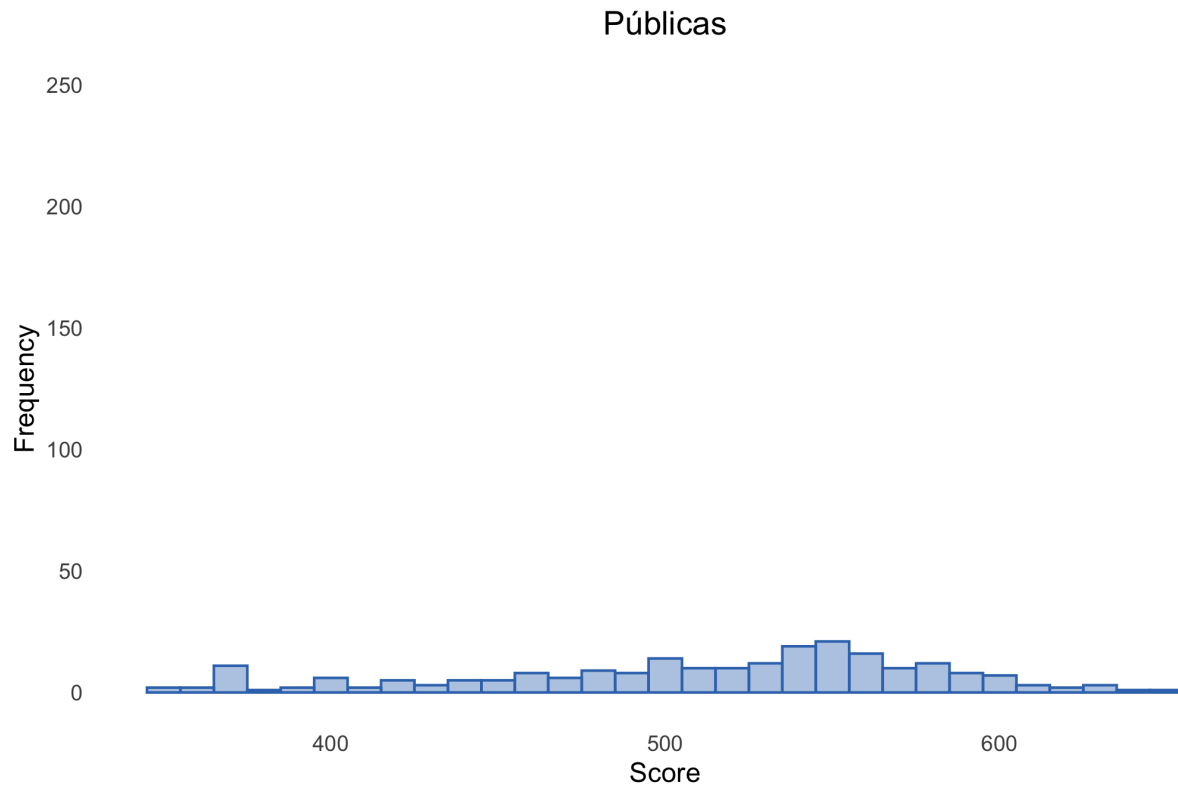


```

library(ggplot2)
plot_3 <- school_data %>%
dplyr::filter(adm == 'Sin información') %>%
ggplot(. , aes(x = y_j)) +
geom_histogram(
  position = "identity",
  alpha = 0.4,
  color = '#3876BA',
  fill = '#3876BA',
  binwidth = 10
) +
xlab('Score') +
ylab('Frequency') +
labs(title="Públicas") +
ylim(c(0,250)) +
theme_minimal() +
theme(
  panel.background = element_blank(),
  panel.grid.minor = element_blank(),
  panel.grid.major = element_blank(),

```

```
axis.ticks = element_blank(),
plot.title = element_text(hjust = 0.5)
)
plot_3
```



Histogramas con ggplot

```
#-----
# histogramas para visualizar distribuciones
#-----

#-----
# histogramas superpuestos
#-----

school_data %>%
psi2301::remove_labels() %>%
ggplot(.,
aes(
x = y_j,
color = adm,
fill = adm
)
) +
geom_histogram(
```

```

        binwidth = 10,
        position="identity",
        alpha=0.5
    ) +
scale_color_manual(
values = c(
    'Públicas'      = 'black',
    'Privadas'      = 'black',
    'Sin información' = 'black'
)
) +
scale_fill_manual(
values = c(
    'Públicas'      = '#FCFAF9',
    'Privadas'      = '#FFCF00',
    'Sin información' = '#ED271D'
)
) +
ylab('n') +
xlab('Score') +
theme_minimal() +
theme(
    panel.background = element_blank(),
    panel.grid.minor = element_blank(),
    panel.grid.major = element_blank(),
    axis.ticks = element_blank(),
    plot.title = element_text(hjust = 0.5)
)

```

